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Corporate Governance, Earnings Management, and the Information Content of Accounting Earnings: Theoretical Model and Empirical Tests.

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**Corporate Governance, Earnings Management, and the
Information Content of Accounting Earnings: Theoretical
Model and Empirical Tests**

**A dissertation submitted to the Faculty of Business in candidacy for
the degree of Doctor of Philosophy**

**by
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March 2005

STATEMENT OF SOURCES

To the best of my knowledge and belief, the work presented in this thesis is original, except as acknowledged in the text. All sources used in the study have been cited, and no attempt has been made to project the contribution of other researchers as my own. Further, the material has not been submitted, either in whole or part, for a degree at this or any other University.

Turki Bugshan

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It is known that behind every successful man is a woman. This thesis is dedicated with love to this truly great woman who taught me never to give up – my mother.

ABSTRACT

The primary objective of this dissertation is to show that corporate governance affects the value relevance of earnings in the presence of earnings management. The role of corporate governance is to reduce the divergence of interests between shareholders and managers. The role of corporate governance is more useful when managers have an incentive to deviate from shareholders' interests. One example of management's deviation from shareholders' interests is the management of earnings through the use of accounting accruals. Corporate governance is likely to reduce the incidence of earnings management. Corporate governance is also likely to improve investors' perception of the reliability of a firm's performance, as measured by the earnings, in situations of earnings management. That is, corporate governance will be value relevant when earnings management exists. The results of this research support these propositions.

In this thesis, the value relevance of earnings is measured using the earnings response coefficient. Earnings management is measured using the magnitude of abnormal accruals as estimated by the modified Jones (Dechow et al., 1995) model. A review of the corporate governance literature revealed nine attributes that were expected to impact on shareholders' perception of earnings reliability due to their role in enhancing the integrity of the financial reporting process. The nine attributes represent three categories of corporate governance: 1) organisational monitoring; 2) incentive alignment; and 3) governance structure.

Organisational monitoring includes ownership concentration, debt reliance, board independence, and the independence and competence of the audit committee. Incentive alignment includes managerial ownership and independent directors' ownership. Governance structure includes CEO dominance and board size. These attributes are used

in this study to assess the impact of corporate governance on earnings management and the information content of earnings.

Information dynamics models, such as the Ohlson (1995) model provide a testable pricing equation that also identifies the role non-accounting information (i.e. corporate governance) plays in determining firm value. Based on Ohlson's (1995) model, the change in value model, as developed by Easton and Harris (1991), is modified to include the proposed interaction between corporate governance and earnings management.

Pooled GLS regression is employed as the primary technique to estimate the coefficients. Four hypotheses are used to test the connections among corporate governance, abnormal accruals, and the earnings response coefficients. The returns-earnings model is used to test the interaction coefficients after incorporating earnings management (Hypothesis Two), corporate governance (Hypothesis Three), or both (Hypothesis Four). These coefficients are then examined using the Wald test to find out whether the earnings response coefficients after incorporating indicators of earnings reliability are significantly different from the earnings response coefficients irrespective of any propositions.

The sample was drawn from the top ASX 500 listed companies for the years 1997 to 2000. The final sample contained 778 firm-year observations. Certain industries (financial, regulated, and mining) were excluded from the sample. One of the reasons the period 1997-2000 was chosen is due to the expected impact of the Asian currency crisis on increasing firms' incentive to manage earnings.

The results reveal that: 1) board size and audit committee independence are negatively associated with the magnitude of abnormal accruals; 2) incorporating the magnitude of abnormal accruals to the returns-earnings model does not significantly alter

the earnings response coefficient; 3) the earnings response coefficients are significantly different after incorporating CEO dominance and independent directors' ownership; and 4) conditioning on the magnitude of abnormal accruals improves the explanatory power of the interaction between corporate governance and earnings over share returns.

Although not all corporate governance attributes suggested in the literature impact on investors' perception of a firm's performance, the primary proposition that corporate governance affects this perception when earnings are managed is supported. The primary contribution of the study is finding evidence supporting the moderating effect of earnings management on the relationship between corporate governance and the value relevance of earnings. These results validate Hutchinson and Gul's (2004) claim that the role of corporate governance attributes in firm performance should be evaluated in concurrence with a firm's organisational environment. Future research should control for corporate governance and earnings management, as indicators of earnings reliability, when using returns-earnings regressions to address a research question.

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ABBREVIATIONS

Abbreviation	Term
$A_{i,g}$	Beginning of year total assets
AA_{it}	Abnormal Accruals
AAA_{it}	Absolute Value of Abnormal Accruals
ASX	Australia Stock Exchange
$AUDCMP_{it}$	Audit Committee Competence
$AUDIND_{it}$	Audit Committee Independence
BETA	Beta Risk
$BRDIND_{it}$	Board Independence
$BRDSIZE_{it}$	Board Size
ΔCA_t	Change in current assets in year t
CAPM	Capital Asset Pricing Model
$\Delta Cash_t$	Change in cash and cash equivalents in year t
CCLSR	Centre for Corporate Law and Securities Regulations
CEO_{it} (CEO)	CEO dominance (Chief Executive Officer)
CG	Corporate Governance
ΔCL_t	Change in current liabilities in year t
ΔDCL_t	Change in debt included in current liabilities in year t.
D_{0j}	Dummy for absolute value of abnormal accruals
D_{1j}	Dummy variable for Ownership Concentration
D_{2j}	Dummy variable for Board Size
D_{3j}	Dummy variable for Board Independence
D_{4j}	Dummy variable for Audit Committee Competence
D_{5j}	Dummy variable for Independent Directors' Ownership
D_{6j}	Dummy variable for Managerial Ownership
D_{7j}	Dummy variable for Debt Reliance
$DEBTRL_{it}$	Debt Reliance
DEP_t	Depreciation and amortization expense in year t
DF	Degree of freedom
E_{it}	Earnings Level
ΔE_{it}	Earnings Change
$EBXA_{it}$	Earnings before extraordinary and abnormal items
EM	Earnings Management
GAAP	Generally Accepted Accounting Principles
GLS	Generalised Least Square
GROWTH	Firm growth
H	Hypothesis
OC_{it}	Operating Cash Flow
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Square
$OWNCON_{it}$	Ownership Concentration
$OWNMAN_{it}$	Managerial Ownership
$OWNOUT_{it}$	Independent Directors' Ownership
PPE	Property, Plant and Equipment
R_i or AR_{it}	Share Return
ΔREC	Change in accounts receivables
RESET	Regression Specification Error Test
ΔREV	Change in net revenue
SE	Standard Error
TA_j	Total Accruals

CHAPTER ONE: INTRODUCTION

1.1 EARNINGS RELEVANCE AND RELIABILITY

The common factor in all value relevance studies is that an accounting number is deemed value relevant if it has a significant association with equity market value (Barth et al., 2001a). The value relevance literature suggests that shareholders use accounting earnings to estimate future returns (e.g. Beaver, 1998; Choi et al., 1997; Kallunki and Martikainen, 1997; Barth et al., 1996; Barth, 1994, 1991; Lev, 1989).¹

If reported earnings are considered by investors to be value relevant and useful in estimating future returns, share returns and earnings should be related. Since Ball and Brown (1968), a long line of research empirically demonstrates that accounting earnings contained in financial reports are related to share returns (Liu and Thomas, 2000; Lipe et al., 1998; Das and Lev, 1994; Wild, 1992; Easton and Harris, 1991; Collins and Kothari 1989; Easton and Zmijewski, 1989; Kormendi and Lipe, 1987)².

Returns-earnings research finds that the explanatory power of earnings is limited and differs across firms. The extent of earnings' explanatory power is limited due to three reasons: methodological shortcoming, investors' irrationality, and the low quality of

¹ Value relevance studies use equity market value as the valuation benchmark to assess how well particular accounting amounts reflect information used by investors (Barth et al., 2001).

² This list is indicative and not intended to be exhaustive.

reported earnings (e.g. Ramakrishnan and Thomas, 1998; Collins et al., 1994; Ryan and Zarowin, 1993; Lev, 1989).

The general problem of the returns and earnings relationship is of continuing concern for the accounting researchers. While Lev (1989) suggested that methodological misspecifications or the existence of investors' irrationality may contribute to observed weak returns-earnings association, several studies provide empirical evidence to support that the low information content of reported earnings is responsible for the weak association (e.g. Kallunki and Martikainen, 1997; Easton et al., 1992). Their findings suggest that the low information content of earnings is a significant contributor to the weak observed returns-earnings relationship and is an outcome of low earnings reliability due to management manipulation.

Earnings reliability becomes questionable when managers have an incentive to manipulate reported earnings opportunistically (e.g. Rosenfield, 2000; Dechow and Skinner, 2000; Brown, 1999; Healy and Wahlen, 1999).³ Such manipulations alter shareholders' perception of the reliability of reported earnings due to the increase in the level of non-permanent components included in total earnings (e.g. Brown, 1999; Healy, 1985).⁴ Prior studies empirically show that non-permanent earnings reduce the information content of accounting earnings (e.g. Anthony and Petroni, 1997; Wild, 1996; Collins and Salatka, 1993; Imhoff and Lobo, 1992). Consequently, it is crucial to evaluate returns-earnings relationship through assessing earnings reliability collectively with its relevance.

³ The Conceptual Framework identifies relevance and reliability as the key characteristics of accounting information used in market valuation decisions. If accounting earnings have been empirically demonstrated to be value relevant, it is then rational to attribute the weak explanatory power of accounting earnings for share returns to the low reliability of earnings rather than relevance.

⁴ Permanent earnings are defined as the portion of earnings that alter investors' perception about future earnings and cash flows, and thus affect share prices. Non-permanent earnings are defined as the portion of earnings with no implications on expected future earnings.

1.2 EARNINGS MANAGEMENT AND CORPORATE GOVERNANCE

‘Earnings management’ is a form of earnings manipulation that is likely to reduce the reliability of earnings.^{5,6} Firms that engage less in earnings management are likely to offer more permanent accounting earnings (e.g. Kothari, 2001; Lev, 1989; Wang et al., 1994; Ali and Hwang, 1995).

Cheng et al. (1996) demonstrate the existence of this link between the permanence of earnings and the information content of earnings. They found that the less permanent accounting earnings are, the less informative they are in relation to future earnings and cash flows (e.g. Cheng et al., 1996, 1997; Collins and Kothari, 1989; Easton and Zamijewski, 1989; Kormendi and Lipe, 1987).

Consequently, earnings management should be negatively associated with the information content of earnings. The association is empirically established in the literature (e.g. Wang et al., 1994; Ali and Hwang, 1995; Cheng et al., 1997). When managers manage earnings for opportunistic purposes, accounting earnings become a less

⁵ Schipper (1989) defines earnings management as: “a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain”. Healy and Wahlen (1999) state: “earnings management occurs when managers use judgement in financial reporting and in structuring transaction to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers”.

⁶ Managers have some degree of flexibility and discretion in reporting their financial performance and they may use it either opportunistically to manage earnings (Christie and Zimmerman, 1994) or they may use it to communicate private value-relevant information about the firm’s future performance (Jones, 1991; Healy and Palepu, 1993). However, much of the extant literature finds that earnings management is carried out with the intention of either misleading financial statement users or of biasing contractual outcomes that depend on accounting earnings. Recent studies have provided evidence of income-increasing opportunistic earnings management related to initial public offerings (Teoh, Welch and Wong, 1998a; Teoh, Wong and Rao, 1998), seasoned public offerings (Teoh, Welch and Wong, 1998b), stock financed acquisitions (Erickson and Wang, 1998), meeting analyst earnings expectations (Payne and Robb, 2000; Burgstahler and Eames, 1998), meeting management forecasts (Kasznik, 1999), and avoiding earnings decreases and losses (Burgstahler and Dichev, 1997). Examples of settings leading to income-decreasing earnings management include management buyouts (DeAngelo, 1988; Perry and Williams, 1994), executive compensation (Healy, 1985; Holthausen, Larcker, and Sloan, 1995), and appeals for import relief (Jones, 1991). This body of research has found convincing evidence of opportunistic earnings management in settings where there exist strong incentives to manage earnings.

reliable measure of a firm's financial performance. The less reliable earnings are, the less informative and useful they become. Accordingly, it is justifiable to use earnings management as an indicator of the reliability of earnings.

Accounting earnings are more reliable and informative when managers' opportunistic behaviour is controlled using monitoring systems (e.g. Wild, 1996; Dechow et al., 1996). Klein (2002b) and Peasnell et al. (2000a) show that monitoring attributable to corporate governance reduces management's capacity to manage earnings.⁷

Monitoring attributable to corporate governance has the capacity to improve the reliability of accounting earnings; and therefore, increases the informativeness of accounting earnings. Corporate governance also helps investors by aligning the interest of managers with the interests of shareholders and enhancing the reliability of financial information and the integrity of the financial reporting process (Watts and Zimmerman, 1986).⁸ The results of Gul and Tsui (2001) support the effectiveness of corporate governance as a monitoring system.

Given that earnings management are negatively associated with corporate governance and that corporate governance is positively associated with the integrity of the financial reporting process, it is then justifiable to also use corporate governance as an indicator of the reliability of accounting earnings.

⁷ Corporate governance is a system used to achieve firm objectives and monitor performance (OECD, 1999). Good corporate governance should align the objectives of management with the objectives of shareholders (Cadbury report, 1992; OECD, 1999) and should facilitate effective monitoring, thereby encouraging managers to use resources more efficiently (OECD, 1999).

⁸ Corporate governance's primary objective is not to directly improve corporate performance, but to resolve agency problems by aligning management's interests with the interests of shareholders (Maher and Andersson, 2000). A large segment of the corporate governance literature focuses on directly linking corporate governance to corporate performance. Empirical results from the literature are mixed and indecisive (Lawrence and Stapledon, 1999).

Most returns-earnings studies fail to account for earnings reliability, which is a key characteristic for earnings informativeness. If corporate governance and/or earnings management improve the explanatory power of accounting earnings, then the results should support the proposition that investors use other value relevant information (i.e. corporate governance and earnings management) to assess the reliability of accounting earnings.

While there is little guidance on how corporate governance impacts on the information content of accounting earnings, extant research offers no theoretical comprehensive explanation for the role earnings management tends to play in the corporate governance-earnings informativeness relationship. As a result, the primary research question is:

“Does corporate governance influence the information content of accounting earnings in the presence of earnings management?”

1.3 ADDRESSING THE PROBLEM

The study’s primary objective is to investigate the association between corporate governance and earnings informativeness in the presence of earnings management. In this thesis, the information content of earnings (value relevance of earnings) is measured using the earnings response coefficient. The earnings response coefficient is a measure of the extent to which new earnings information is capitalised in share prices (Cho and Jung, 1991). Earnings management is measured using the magnitude of abnormal accruals as estimated by the modified Jones (Dechow et al., 1995) model.

A review of the corporate governance literature revealed nine attributes that were expected to impact on shareholders’ perception of earnings reliability due to their role in

enhancing the integrity of the financial reporting process. The nine attributes represent three categories of corporate governance: 1) organisational monitoring; 2) incentive alignment; and 3) governance structure.

Organisational monitoring includes ownership concentration, debt reliance, board independence, and the independence and competence of the audit committee. Incentive alignment includes managerial ownership and independent directors' ownership. Governance structure includes CEO dominance and board size. These attributes are used in this study to assess the impact of corporate governance on earnings management and the information content of earnings.

Based on Ohlson's (1995) model, the change in value model, as developed by Easton and Harris (1991), is modified to include the proposed interaction between corporate governance and earnings management. Pooled GLS regression is employed as the primary technique to estimate the coefficients. The returns-earnings model is then tested after incorporating earnings management, corporate governance, or both. These coefficients are then examined using the Wald test to find out whether the earnings response coefficients after incorporating indicators of earnings reliability are significantly different from the earnings response coefficients irrespective of any propositions. A direct regression model is used to examine the connections between corporate governance and earnings management.

The results reveal the following. First, board size and audit committee independence are negatively associated with the empirical indicator of earnings management at significant levels. Second, the empirical indicator of CEO dominance significantly decreases the incremental information content of earnings and improves the overall explanatory power of the returns-earnings model. Third, conditioning on the

empirical indicator of earnings management significantly improves the effect of corporate governance on earnings response coefficients and the overall explanatory power of earnings. Additional tests show that board size, managerial ownership and debt reliance are negatively associated with share returns at significant levels (see Appendix A).

1.4 CONTRIBUTION TO KNOWLEDGE

The major contribution is investigating, within the Australian context, the impact of corporate governance attributes on the returns-earnings relationship when managers' have an incentive to manage earnings. The results will identify circumstances where the informational contributions of accounting earnings differ. This, in turn, provides a greater understanding of the contextual nature of the returns-earnings relationship. In doing so, the study will contribute to five groups: investors, corporations, regulators, educators, and researchers.

1.4.1 Investors

The results should confirm investors' perception about the role corporate governance plays in enhancing the reliability of the financial reporting process and the information content of accounting earnings. Measuring corporate governance allows investors to be mindful of management's capacity to alter accounting earnings for opportunistic purposes, which helps investors in evaluating the informativeness and reliability of accounting earnings. The results from this study will unlock a new door for investors to improve their decision-making process.

1.4.2 Corporations

Corporate governance is related to issues concerning the structure of the corporation, such as share holdings, boards, and board committees. Corporations need to

satisfy shareholders and attract potential investors by adopting good corporate governance practices. The results should highlight the importance of good corporate governance practices by measuring the impact of corporate governance practices on market's response to accounting earnings. This enables corporations to evaluate the efficiency of corporate governance in enhancing the reliability and the information content of the end product, being the financial reports. Once shareholders are able to obtain reliable information about corporate performance, their response to financial performance measures becomes greater.

1.4.3 Regulators

Any move to harmonise corporate governance practices around the globe requires evidence that corporate governance systems are effective. This study provides evidence of the role corporate governance plays in enhancing the reliability of value relevant information (i.e. accounting earnings).

New corporate governance regulations and revisions of existing corporate governance rules would be based on evidence from empirical studies rather than politically motivated debates. Empirically evidence supporting the importance of corporate governance's role would:

1. prove that the benefits of imposing governance regulations on firms outweigh the costs; and
2. provide regulators with sufficient justification to impose additional corporate governance requirements.

1.4.4 Educators

Educators of corporate governance will have a clearer understanding of the role corporate governance plays in capital markets. The model will also assist classroom

discussions on the role of corporate governance and the analysis of case studies. For instance, educators could encourage the classroom to evaluate corporate governance practices for different firms and match their results with each firm's magnitude of abnormal accruals and earnings response coefficient, as part of their empirical research project.

1.4.5 Researchers

Results from the study contribute to the literature in the following ways:

1. As far as it is known, no prior study has, theoretically and empirically, examined the full interaction among corporate governance, earnings management, and the earnings response coefficient. The study contributes to and merges different distinct streams of research.
2. Governance attributes adopted by recent regulatory developments (e.g. Sarbanes-Oxley act of 2002) are empirically tested in the proposed model (i.e. director independence, financial expertise).
3. The results should clarify the reason behind the inconclusive results regarding the governance-performance relationship.
4. The results support the view from the literature that abnormal accruals are better measures of earnings management than other approaches, such as the frequency distribution approach.
5. The major contribution to the earnings response coefficient research is to show that corporate governance and earnings management (as indicators of earnings reliability) are important determinants of earnings response coefficient.

6. The results provide support for external validity for prior studies by testing different economic setting, Australia, and by assessing the robustness of proposed theories.

1.5 ORGANISATION OF THE THESIS

Chapter Two develops a model, which relates corporate governance attributes and earnings management to the information content of accounting earnings. The constructs in the model are identified and justified by analysing the existing literature. Finally, the chapter discusses propositions and limitations.

Chapter Three describes the research method and techniques used to test the propositions stated in Chapter Two. Chapter Three begins with an overview of the models and restatements of the propositions as hypotheses to be empirically tested. A description of the sample, study period, and data collection is followed by the operationalisation of the theoretical constructs. Finally, the chapter presents an explanation of the analysis procedures

Chapter Four starts with descriptive statistics and correlation analysis. This is followed by the presentation of the results of the tested models and the inferences drawn from the tests of the hypotheses. The chapter concludes with a discussion of the robustness checks for the models.

Chapter Five summarises the finding of the study including limitation of the results. Chapter Five also investigates the impact of the results on future research. The conclusion restates the study's contribution to knowledge.

CHAPTER TWO: THEORY DEVELOPMENT

2.1 INTRODUCTION

Chapter One identified the need for indicators of the reliability of accounting earnings. It also identified earnings management and corporate governance as possible indicators of earnings reliability. Chapter Two develops the theoretical link among corporate governance, earnings management, and the information content of accounting earnings. A set of propositions are structured to test the model, by drawing on the accounting and corporate law literature. The model is based on the view that shareholders use earnings management and corporate governance as guiding cues in their assessment of the reliability of earnings.

The chapter proceeds by proposing a general model in section 2.2. The model identifies nine attributes within three major aspects of corporate governance as likely to influence the reliability of accounting earnings. Next, the chapter discusses the literature on the information content of accounting earnings and earnings management in sections 2.3 and 2.4. Section 2.5 discusses the relevant literature for corporate governance attributes. The limitations are discussed in section 2.6. Section 2.7 provides a summary of the chapter and the propositions.

2.2 MODEL OVERVIEW

Corporate governance and earnings management can be used as proxies for earnings reliability in the returns-earnings model. In particular, the model's focus is on measuring the improvement in the overall explanatory power of earnings by introducing corporate governance and earnings management, as well as examining the connections among corporate governance, earnings management, and the value-relevance of earnings.

Accounting earnings are deemed value relevant due to the association between share returns and accounting earnings (e.g. Easton and Harris, 1991; Kormendi and Lipe, 1987). The association is based on shareholders' reaction to accounting earnings, which is dependent on shareholders' perception of earnings usefulness and reliability.

Empirical results show earnings to be modestly informative in explaining movements in share prices (e.g. Ramakrishnan and Thomas, 1998; Collins et al., 1994; Ryan and Zarowin, 1993; Lev, 1989). Equation 1 presents the returns-earnings (Easton and Harris, 1991) model.⁹

Equation 1: Returns and Earnings association based on the earnings valuation model.

$$R_j = \beta_0 + \beta_1 E_j + \beta_2 \Delta E_j + v_j$$

R_j is the change in the price per share of firm j scaled by beginning price.

E_j is accounting earnings per share of firm j .

ΔE_j is the change in accounting earnings per share of firm j .

A valuable explanation of the weak returns-earnings association is that accounting earnings lack information relating to future earnings and cash flows (e.g. Kallunki and Martikainen, 1997; Easton et al., 1992; Lev, 1989). The incidence of earnings manipulations by managers prevents accounting earnings from being a reliable measure

⁹ As noted in Easton and Harris (1991), Ohlson (1989), and Ali and Zarowin (1992), earnings level and earnings changes have different valuation implications depending on the presence of non-permanent earnings. When earnings consist of a mixture of permanent and non-permanent earnings components, unexpected earnings can be better estimated by a weighted average of earnings level and earnings change.

of future earnings and cash flows (e.g. Lev, 1989; Wang et al., 1994; Ali and Hwang, 1995). The less reliable are accounting earnings, the less informative they are in relation to future earnings and cash flows (Cheng et al., 1996, 1997).

If reliable earnings are useful to shareholders, then reliable earnings are more value relevant than less reliable earnings. Thus, indicators of earnings reliability (i.e. corporate governance and earnings management) should be value relevant due to their usefulness to shareholders.

It follows that the information content of accounting earnings is reduced by indicators of less reliable earnings, such as managed earnings (e.g. Wang et al., 1994; Ali and Hwang, 1995; Cheng et al., 1997). The link between corporate governance and the information content of accounting earnings is based on the view that corporate governance influences shareholders' perception earnings reliability through its influence over management's activities and opportunistic behaviour. A segment of earnings studies empirically supported this view on the link between corporate governance and earnings management (see Table 2-1).¹⁰

¹⁰ While Healy and Wahlen (1999) suggest that there is overwhelming evidence to support the view that earnings management are made for opportunistic purposes, there is not much support for the view that earnings are managed for efficiency reasons. Hence, earnings management are expected to be opportunistic.

Table 2-1: Relevant prior studies

Governance Attributes	Corporate Governance and the information content of earnings	Corporate Governance and Earnings Management	Corporate Governance and Performance
Ownership Concentration	Bryan et al., 2004.	Dempsey et al., 1993.	Firth, et al., 2002; Demsetz and Villalonga, 2001; Fürst and Kang, 2000; Lehmann and Weigand, 2000; Pedersen and Thomsen, 1999; Burkart et al., 1997; Bebchuk, 1994; Shleifer and Vishny, 1986; Stiglitz, 1985.
Managerial Ownership	Bryan et al., 2004; Gabrielsen et al., 2002; Gul et al., 2002; Warfield et al., 1995.	Bowen et al., 2004; Peasnell et al., 1998; Dechow et al., 1996; Warfield et al., 1995.	Balatbat et al., 2004; Bowen et al., 2004; Faccio and Lasfer, 1999; Agrawal and Knoeber, 1996.
Independent Directors' Ownership		Chtourou et al., 2001.	Fiegenger et al., 1996; Oswald and Jahera, 1991; Kim et al., 1988; Kesner, 1987; Lloyd et al., 1986.
Debt Reliance	Gul et al., 2000; Dhaliwal et al., 1991; Watts and Zimmerman 1990 and 1986.	Gul et al., 2000; DeFond and Jiambalvo, 1994; Sweeney, 1994; Watts and Zimmerman, 1990 and 1986.	Firth, et al., 2002; Agrawal and Knoeber, 1996; Grossman and Hart, 1982.
CEO dominance	Bryan et al., 2004; Anderson et al., 2003.	Chtourou et al., 2001; Dechow et al., 1996.	Coles et al., 2001; Fosberg and Nelson, 1999; Dalton et al., 1998; Brickley et al., 1997; Baliga et al., 1996; Boyd, 1995; Daily and Dalton, 1993; Donaldson and Davis, 1991; Rechner and Dalton, 1991.
Board Size	Vafeas, 2000.	Ching et al., 2002; Chtourou et al., 2001; Alonso et al., 2000; Dechow et al., 1996.	Bradbury et al., 2004; Cheng, 2004; Faleye, 2003; Kiel and Nicholson, 2003; Bhagat and Black, 1999; Eisenberg et al., 1998; Brown and Maloney, 1998; Yermack, 1996.
Board Independence	Anderson et al., 2003; Vafeas, 2000.	Xie et al., 2003; Klein, 2002b; Chtourou et al., 2001; Alonso et al., 2000; Peasnell et al., 2000 and 1998; Dechow et al., 1996.	Cotter and Silvester, 2003; Fürst and Kang, 2000; Rhoades et al., 2000; Vafeas, 2000; Bhagat and Black, 1999; Calleja, 1999; Lawrence and Stapledon, 1999; Dalton et al., 1998; Hutchinson, 1998; Klein, 1998; Agrawal and Knoeber, 1996; Yermack, 1996; Grace et al., 1995; Daily and Dalton, 1993; Pearce and Zahra, 1992; Hermalin and Weisbach, 1991; Baysinger and Butler, 1985.
Audit Committee Independence	Bryan et al., 2004.	Xie et al., 2003; Klein, 2002b; Chtourou et al., 2001; Peasnell et al., 2000.	Bradbury et al., 2004; Cotter and Silvester, 2003; Ellstrand et al., 1999; Klein, 1998.
Audit Committee Competence	The attribute is the result of incorporating directors' independence and expertise. Several studies have tested the link between the expertise of directors on the audit committee and earnings management (Bryan et al., 2004; Chtourou et al., 2001; DeZoort and Salterio, 2001; Xie et al., 2003) or share returns (Defond et al., 2004).		

Table 2-1 shows studies that empirically examined the impact of corporate governance on performance, earnings management, and earnings informativeness. While there are numerous attributes of corporate governance, nine attributes are selected

because of their potential impact on shareholders' perception of the reliability of the financial reporting process (i.e. reported earnings).^{11, 12}

The underlying assumption for using these attributes is that while shareholders respond to earnings reliability, they also respond to a number of cues that confirm the reliability of earnings. In this research, these cues are corporate governance attributes and earnings management.

Corporate governance attributes are useful in signalling to shareholders the degree of managerial manipulations (e.g. Beasley, 1996; Dechow et al., 1996). This, in turn, indicates the level of earnings reliability. The third column of Table 2-1 shows the research where corporate governance impacts on earnings reliability. This research extends this relationship by proposing shareholders form a perception of earnings reliability based on cues, such as corporate governance. Each governance attribute impacts on shareholders' perception as follows:

1. Ownership concentration:

Shareholders are likely to expect that larger shareholders have an incentive to monitor management and reduce managers' ability to act opportunistically. Less opportunistic manipulations lead to more reliable and value relevant earnings (e.g. Lev, 1989; Wang et al., 1994; Ali and Hwang, 1995).

¹¹ While some attributes were not selected in order to avoid nesting problems, Appendix C discusses and justifies the exclusion of other related attributes of corporate governance.

¹² The research framework is based on the assumption that corporate governance attributes are independent of each other. There is no overwhelming evidence in the corporate governance literature that establishes an interaction among the attributes of corporate governance used in the study. However, if a harmful interaction does exist between any of corporate governance attributes, statistical techniques will be used to avoid endogeneity problems (Section 3.5.4 for details).

2. Debt reliance:

Shareholders are likely to expect that high debt reliance accompanies higher debt monitoring. Creditors have an incentive to monitor managers and reduce their manipulations when their investments are large (e.g. Daniels, 1995; OECD, 1995).

3. Board independence:

Shareholders are likely to expect outside directors on the board as vigilant monitors of management's performance and behaviour. Board monitoring is likely to control managerial behaviour (e.g. Johnson et al., 1996; Bainbridge, 1993; Fama, 1980).

4. Audit Committee Independence: ¹³

Shareholders are likely to perceive outside directors as efficient monitors of the financial reporting process. The independence of directors on the audit committee has the prospective to reduce management's manipulation of the financial reporting process (e.g. Klein, 2002b).

5. Audit committee competence: ¹⁴

Shareholders are likely to perceive outside directors with financial expertise sitting on the audit committee as efficient monitors. Financial expertise enables directors to detect and prevent opportunistic manipulation from occurring in the financial reports (e.g. Abbott et al., 2002).

6. Managerial ownership:

Shareholders are likely to perceive that managers' interests are aligned with their interests when managers become shareholders. Thus, managers with equity stakes in

¹³ Audit committee independence is included with caution after checking for harmful collinearity with board independence or audit committee competence.

¹⁴ Competence is used only in this study to represent the merging effect of committee independence and director expertise.

the firm are more likely to report reliable earnings that reflect the underlying economic value of the firm (Warfield et al. 1995).

7. Independent directors' ownership:

Shareholders are likely to perceive ownership by independent directors as a means to bring closer the interests of independent directors with interests of shareholders. Thus, greater ownership by independent directors reduces the likelihood of directors deviating from the interest of shareholders (e.g. Bhagat and Black, 1999; Bhagat et al., 1999).

8. Board size:

Shareholders are likely to perceive large boards are having a substantial number of experienced directors and are able to dedicate more directors into monitoring managers. Larger board are associated with greater monitoring capacity over managers' opportunistic behaviour (e.g. Xie et al., 2003; Chtourou et al., 2001).

9. CEO dominance:

Shareholders are likely to perceive a greater monitoring capacity by the board when the chairman of the board is independent of management.¹⁵ Thus, CEO dominance indicates that less control is likely to be exercised over management's activities and behaviour (Finkelstein and D'Aveni, 1994).

These nine attributes of corporate governance have been shown to improve the integrity of the financial reporting process; and therefore, increases the reliability and value relevance of accounting earnings. While there is little guidance on how corporate governance interacts with information content of earnings, extant research offers no comprehensive explanation for the potential role earnings management tends to play in

¹⁵ While chairperson is the correct term, the literature seems to persist in using the term chairman. As the study derives its constructs from the literature, chairman is used through out this research.

the link between corporate governance and the information content of accounting earnings.

The second column of Table 2-1 shows the attributes of governance that have been associated with the information content of earnings. In general, there is little consistent evidence that show governance to affect the information content of earnings. Section 2.3 presents the information content of earnings literature and proposes corporate governance attributes as variables that interact with earnings to inform the market.

2.3 VALUE RELEVANCE OF ACCOUNTING EARNINGS

The value-relevance stream of research is based on the premise that if information is useful, investors will adjust their behaviour and the market will respond quickly through changes in share prices. Therefore, information is considered relevant if share returns are associated with the release of the information.

The information content of accounting earnings is based on the understanding that accounting earnings, as a performance measure, are value relevant (e.g. Beaver, 1998; Kallunki and Martikainen, 1997; Lev, 1989). There has been significant range of studies, since Ball and Brown (1968), empirically showing the importance of accounting earnings as value-relevant information for investors (e.g. Liu and Thomas, 2000; Lipe et al., 1998; Das and Lev, 1994; Wild, 1992; Easton and Harris, 1991; Collins and Kothari 1989).¹⁶

A primary research design consideration for value relevance research is the selection of the model used in the tests. Residual income valuation models (e.g. Ohlson model, 1995) express firm value as the sum of the book value of equity and the present value of future abnormal earnings (Ota, 2001). Thus, if share prices are a linear function

¹⁶ This list is indicative and not intended to be exhaustive.

of only book value of equity and expected abnormal earnings, then share returns are a linear function of level of earnings and change of earnings.¹⁷

Earnings level, *ceteris paribus*, is derived from change in book value and change in earnings is derived from the movement of earnings level from period t_0 to t_1 . Thus, the Easton and Harris (1991) returns model is a measure of the change in price from period t_0 to t_1 relative to the change in the Ohlson (1995) residual income model.

The value-relevance of a particular firm's accounting earnings depends on the ability of current accounting earnings to facilitate the prediction of future returns by predicting future earnings and cash flows. Reliable earnings are price informative, because empirical evidence shows that reliable measures of future earnings and cash flows (i.e. permanent earnings) provide value relevant information (Cheng et al., 1996, 1997).

Although the market places greater emphasis on reliable earnings (Freeman and Tse, 1992), it is hard for shareholders to observe the reliability of earnings. Alternatively, shareholders use cues to guide the assessment of earnings reliability. The cues should be those that affect the actual earnings reliability.

It is proposed that there are two main indicators of earnings reliability that will be investigated: 1) earnings management; and 2) corporate governance. The importance of earnings reliability rests with the assumption that more reliable earnings will be of greater relevance in assessing the value of a firm. Next, the literature relating to earnings management and corporate governance is discussed.

¹⁷ Deng and Lev (1998) recognize that the share prices (price model) may suffer from size-related problems (scale effect) and may not be well specified. Scale effects are generally understood to arise from the fact that large (small) firms will have large (small) market capitalization, large (small) book value, and large (small) earnings. In contrast, share returns (returns model) do not suffer such problems (scale-free) because the variables used in the model are deflated by the lagged market value of equity and therefore scale-free (Easton, 1999; Easton and Sommers, 2003).

2.4 EARNINGS MANAGEMENT

Earnings management is an outcome of some degree of flexibility and discretion managers have in reporting their financial performance. Managers may use this discretion to either opportunistically manage earnings (Christie and Zimmerman, 1994) or communicate private value-relevant information about the firm's future performance (Jones, 1991; Healy and Palepu, 1993). However, much of the extant literature finds that earnings management is carried out with the intention of either misleading financial statement users or of biasing contractual outcomes that depend on accounting earnings (e.g. Burgstahler and Eames, 2003; Payne and Robb, 2000).

Management's incentive to opportunistically manage earnings is driven by contractual agreements and/or change in economic environments. Contractual agreements can take the form of management compensation (eg. Healy, 1985; Holthausen et al., 1995) or debt covenants (eg. DeAngelo et al., 1994; DeFond and Jiambalvo, 1994). For example:

- Reliance on earnings-based compensation systems can supply managers with incentives to increase their personal wealth by managing earnings upwards or downwards. Managing earnings would allow the maximisation of their remuneration for the current period or future periods depending on the parameters of the compensation system (Healy, 1985; Holthausen et al., 1995).
- Debt covenant presents managers with an incentive to manage earnings to avoid violating their debt contracts (DeFond and Jiambalvo, 1994).
- Managers alter earnings to mask poor managerial performance and safeguard themselves from possible dismissals (Dharan and Lev, 1993).

While there are numerous incentives for managers to manage earnings, the literature empirically supports the view that managers manage earnings only when they have an incentive to do so (e.g. Dechow et al., 2000; Peasnell et al., 2000a; Degeorge et al., 1999; Burgstahler and Dichev 1997; Holthausen et al., 1995; Healy, 1985). While firms with high earnings management are deemed to have an incentive to manage earnings, lower levels of earnings management indicate that managers have no incentive to manage earnings.

An important line of current research has focused on corporate governance and its impact on earnings management. This line of research was initiated by Beasley (1996) and Dechow et al. (1996). Both papers empirically show that certain attributes of corporate governance are generally associated with earnings manipulations. Other empirical studies established an association between corporate governance and earnings management (e.g. Peasnell et al., 1998, 2000a; Chtourou et al., 2001). In the current paper, the impact of corporate governance attributes on earnings management is tested, which may increase support for the view that corporate governance plays a monitoring role rather than a performance enhancing role.

Proposition One: Corporate governance is associated with earnings management.¹⁸

Knowing management's ability to manage earnings, shareholders assess their perception of accounting earnings by looking for other information (i.e. earnings management) that verify the earnings reliability. Earnings management is adversely associated with reliable measures of future earnings, such as permanent earnings

¹⁸ As corporate governance is represented by nine attributes, the proposition is expressed in general terms as the directionality of the relationship depends on the nature of each corporate governance attribute.

(Kothari, 2001). This is empirically supported by Subramanyam (1996b). Subramanyam (1996b) finds that managed earnings (abnormal accruals) are less value relevant than unmanaged earnings (normal accruals) by comparing the response coefficient of both forms of earnings.¹⁹

An adverse association between earnings management and the information content of accounting earnings is empirically established in the literature. For example, Ali and Hwang (1995) find that as accruals management increases, the information content of accounting earnings decreases.²⁰ Cheng et al. (1997) also provide evidence suggesting that non-permanent accruals affect the information content of accounting earnings.

The relationship between earnings management and the information content of accounting earnings is based on the argument that the less reliable earnings are less informative. Most prior studies have tested the impact of earnings management on the information content of accounting earnings only during special events (see Table 2-2).

Table 2-2: A summary of the literature on the link between earnings management and the information content of earnings

Special Events	Earnings management and information content of earnings
Equity offering announcements	Marquardt and Wiedman, 2004; Shivakumar, 2000; Rangan, 1998; Teoh et al., 1998
High debt levels	Gul et al., 2000; Watts and Zimmerman, 1990, 1986
High growth	Gul et al., 2000
Substantial earnings surprises	Defond and Park, 2001
Non-linear returns-earnings	Sankar, 2000

¹⁹ The basic principle of accrual accounting is that earnings (accruals + cash flows) is a better indicator of future earnings, dividends, and cash flows than current and past cash flows (Barth et al., 1999). Thus, accruals are value relevant. However, accruals are subject to manipulation. Abnormal accruals either reflect opportunistic earnings management or communicate value relevant information. The results of Gul et al. (2003) are consistent with the notion that auditors anticipate managers to use accruals in non-value maximizing behaviour to conceal poor performance.

²⁰ There are two vehicles through which earnings can be managed: first, through choice of accounting methods; and second, through estimation of accruals (Burilovich and Kattelus, 1997). Manipulation of accounting accruals is likely to be a favoured instrument for earnings management because it has no direct consequences on cash from operations and is relatively difficult to detect (Schipper, 1989; Burilovich and Kattelus, 1997).

The empirical findings comply with the suggestion that earnings management contains useful information to shareholders in their assessment of earnings reliability. As firms that engage less in earnings management are likely to offer more permanent accounting earnings (e.g. Kothari, 2001; Ali and Hwang, 1995; Wang et al., 1994; Lev, 1989), it follows that a firm with high magnitudes of earnings management would likely produce less permanent and less informative earnings than a firm with low magnitude of earnings management.

Proposition Two: Earnings Management is negatively associated with the information content of earnings.

2.5 CORPORATE GOVERNANCE ATTRIBUTES

Due to its adverse impact on management's ability to manage earnings (e.g. Klein 2002b; Peasnell et al., 2000a) and the difficulty markets may have in detecting earnings management, corporate governance is useful to shareholders in assessing the reliability of earnings. While corporate governance attributes are expected to provide shareholders with information about management's capacity to alter accounting earnings opportunistically (Klein 2002b; Peasnell et al., 2000a), a large segment of the corporate governance literature focuses on linking corporate governance to corporate performance. Empirical results from the literature on the governance-performance relationship are mixed and inconclusive (Lawrence and Stapledon, 1999). The Hampel committee (1997) states:

“it is important to recognise there is no hard evidence to link corporate governance to corporate performance, although the committee believes that good governance enhances that prospect”.

The mixed results indicate that corporate governance may play a role other than enhancing firm performance. Agency theory suggests a direct relation between effective monitoring of management and reduced costs of dysfunctional behaviour, rather than a direct increase of performance (Jensen and Meckling, 1976). Hence, corporate governance may act as an assurance to shareholders on the reliability of information provided by managers. Most studies that have corporate governance attributes to be significant have focused on its role in reducing agency costs and aligning managers’ interests with the shareholders’.

Corporate governance’s primary objective is not to directly improve corporate performance, but to resolve agency problems by aligning management’s interests with the interests of shareholders (Maher and Andersson, 2000). Corporate governance achieves the same primary objective by watching over management’s performance and inspecting the financial reporting process.

Regulatory development (e.g. Sarbanes-Oxley Act of 2002) suggests that corporate governance should impact on shareholders’ perception of the information content of accounting earnings. Thus, in situations when accounting earnings are less reliable, shareholders’ response to earnings is likely to depend on corporate governance as an indicator of earnings reliability.²¹

²¹ Given that the nature of ASX rulings does not regard corporate governance practices compulsory, thus using Australian data provides an opportunity to test the impact of different degrees of corporate governance practices.

Shareholders' perception is an outcome that depends on value-relevant cues (i.e. corporate governance) to assist in understanding the degree of earnings reliability (e.g. Wang et al., 1994; Ali and Hwang, 1995; Cheng et al., 1997). The existence of strong corporate governance may increase the value relevance of earnings through a perception of greater integrity of financial reporting and improved reliability management's performance measures (i.e. reported earnings).

Proposition Three: Corporate governance is associated with the information content of earnings.²²

The role of corporate governance is more useful when managers have an incentive to deviate from shareholders' interests (Maher and Andersson, 2000). One example of management's deviation from shareholders' interests is the management of earnings through the use of accounting accruals (Christie and Zimmerman, 1994). The current study argues that corporate governance is likely to improve shareholders' perception of the reliability of earnings in situations of earnings management.

Information dynamics models (i.e. Ohlson, 1995) provide a testable pricing equation that also identifies the roles non-accounting information (i.e. corporate governance) plays in firm value. Based on a formal valuation model of share returns developed by Easton and Harris (1991), corporate governance can be incorporated to model its impact on the information content of earnings after conditioning on earnings management (see Equation 2).

²² As corporate governance is represented by nine attributes, the proposition is expressed in general terms as the directionality of the relationship depends on the nature of each corporate governance attribute.

Equation 2: Corporate governance, earnings management, and the information content of accounting earnings

$$R_j = \beta_0 + \beta_1 E_j + \beta_2 \Delta E_j + v_j$$

$$\beta_1 + \beta_2 = f(CG | EM)$$

R_j is the change in the price per share of firm j scaled by beginning price.

E_j is accounting earnings per share of firm j.

ΔE_j is the change in accounting earnings per share of firm j.

$CG | EM$ is corporate governance attributes conditioned by earnings management.

Equation 2 explains that shareholders use additional variables, in this case corporate governance conditioned by earnings management, to guide their assessment of earnings reliability. The equation is based on the notion that earnings management and corporate governance are used as cues by shareholders to assess the information content of earnings. While earnings management reflects management's incentive to act opportunistically, corporate governance is used to reflect the degree of control exercised over the financial reporting process (e.g. Peasnell et al., 1998, 2000a; Chtourou et al., 2001). Based on this model, proposition four is formulated as follows:

Proposition Four: Managers' incentive to manage earnings moderates the association between corporate governance and the information content of earnings.²³

Corporate governance is a meta concept. The subsequent sub-sections deals with the attributes of corporate governance discussed previously and how they interact with earnings to impact on share returns.

²³ As corporate governance is represented by nine attributes, the proposition is expressed in general terms as the directionality of the relationship depends on the nature of each corporate governance attribute.

2.5.1 Organisational Monitoring

2.5.1.1 Ownership Concentration

Ownership concentration is a measure of the existence of large shareholders in a firm (Thomsen and Pedersen, 2000).²⁴ Large shareholders have greater incentives to monitor management, because the costs associated with monitoring management are less than the expected benefits to their large equity holdings in the firm. Ramsey and Blair (1993) suggest that increased ownership concentration provides large shareholders with sufficient incentives to monitor managers. Demsetz and Lehn (1985) and Stiglitz (1985) empirically support this view by finding that large equity holders have incentives to bear the fixed costs of collecting information and to engage in monitoring management.

In contrast, dispersed ownership leads to weaker incentives to monitor management (Maher and Andersson, 2000). In situations where shareholders hold low stakes in the firm, shareholders have little or no incentive to monitor managers (Ramsay and Blair, 1993; Hart, 1995), because monitoring costs will exceed the gains of monitoring managers.

Contrary to the view discussed above, other studies (e.g. Bebchuk, 1994; Stiglitz, 1985) suggest that ownership concentration may negatively affect the value of the firm, because large shareholders have the capacity to abuse their position of dominant control at the expense of minority shareholders. However, the willingness of large shareholders to expropriate minority shareholders' wealth may be constrained by other incentives,

²⁴ A large segment of the literature on ownership concentration has focused either on the causes of ownership concentration (e.g. Kahn and Winton, 1998; Maug, 1998; Roe, 1994; Bhidé, 1993; Holmstrom and Tirole, 1993; Huddart, 1993; Coffee, 1991; Black, 1990; Mayer, 1988) or the causes of changes in ownership concentration (e.g. Kaplan and Stromberg, 2003; Gompers and Lerner, 1999; Hellman, 1997; Levin, 1995; Bartlett, 1994; Berglof, 1994). Only a small segment of the literature analyses the outcome of ownership concentration, which is explained in the rest of this section.

such as legal remedies available to minority shareholders and the incentive to end management's absolute control over the firm.

Bennedsen and Wolfenzon (2000) argue that larger shareholders are recognised by minority shareholders as a signal of a better monitoring environment. Their argument is consistent with the view that ownership concentration is a monitoring attribute of corporate governance (La Porta et al., 1998).

Building on the agency framework developed by Jensen and Meckling (1976), the existence of large shareholders is expected to lower opportunistic earnings management. The justification for this is that managers at publicly traded firms either lose their control to large shareholders or are constantly monitored by large shareholders.

If higher ownership concentration increases monitoring over management (Demsetz and Lehn, 1985; Stiglitz, 1985), higher ownership concentration should decrease management's capacity to alter accounting earnings and increase the reliability earnings. Dempsey et al. (1993) finds that different categories of ownership concentration are related to different levels of opportunistic earnings management.

Earnings management also reflects the strength of management's incentive to manage earnings. Once managers have no incentive to manage earnings opportunistically, they act according to the interest of shareholders, and thus ownership concentration should not have an impact on shareholders' perception of accounting earnings.

Given the impact of ownership concentration on earnings management and earnings reliability, highly concentrated ownership should affect shareholders' perception of earnings reliability and relevance after conditioning on earnings management. Thus, less reliable earnings associated with high ownership concentration are perceived by

shareholders to be more value relevant than those associated with lower ownership concentration.

As shareholders perceive that monitoring caused by higher ownership concentration reduces earnings management and enhances the reliability and relevance of accounting earnings, the propositions are:

- *Highly concentrated ownership is negatively related to earnings management.*
- *Highly concentrated ownership is positively related to the information content of accounting earnings.²⁵*
- *Managers' incentive to manage earnings moderates the positive association between highly concentrated ownership and the information content of accounting earnings.²⁶*

2.5.1.2 Debt Reliance

Debt reliance, as a governance mechanism, is based on the view that debt-holders monitor and evaluate managerial performance. Although the level of debt reliance is an internal decision, higher debt is expected to be associated with higher monitoring from debt holders (e.g. Agrawal and Knoeber, 1996; Daniels, 1995).

While the literature suggests firms with high debt are more likely to be associated with earnings management to avoid debt covenant violations (e.g. DeFond and Jambalvo, 1994; Sweeney, 1994), a counter response from the finance literature (e.g. Rubin, 1990; Jensen, 1986) recognises that debt could have a monitoring effect. An

²⁵ The proposition incorporates a boundary condition that only includes highly concentrated firms to overcome the confounding effect of firms with perceived limited monitoring contributions.

²⁶ The proposition incorporates two boundary conditions. First, ownership must be highly concentrated to overcome the confounding effect of firms with perceived limited monitoring contributions. Second, the proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

important part of the financing process is risk assessment by debt-holders. Hence, debt-holders have an incentive to monitor managerial performance to assess the risk of the firm (Legoria et al., 1999). Debt-holders have the potential to serve as external monitors over managerial performance (Keasey and Wright, 1997; OECD, 1999; Maher and Andersson, 2000).

Debt-holders have the potential to increase the level of external monitoring because of their industrial knowledge and continuous transactions (Daniels, 1995). Debt-holders are able to develop a broadly based benchmark to evaluate firm performance when they provide loans to a number of different firms in the same industry (Daniels, 1995). The renewal of short-term or medium term loan agreements gives debt-holders more opportunities to monitor managerial performance (Daniels, 1995).

Debt contracts reduce dysfunctional behaviour by using accounting numbers (Smith and Warner, 1979; Leftwich, 1983). Jensen (1986) suggests that the obligations of debt contracts can reduce management incentive to engage in non-optimal activities. Debt-holders tend to use debt covenants in debt contracts to restrict managers from engaging in investment and financing decisions that reduce the value of debt-holders' claims (DeFond and Jiambalvo, 1994).

Debt-holders are able to make demands on a firm's management within the debt contract (Dedman, 2000). Failure to meet such demands may result in higher costs of borrowing or refusal to offer finance. As result, debt-holders have the capacity to pressure managers to act in the interests of debt-holders.

It can also be argued that managers have the incentive to provide more relevant and reliable information to debt-holders and comply with debt covenants in order to obtain finance on more favourable terms. Harris and Raviv (1991) find that the evidence is

broadly consistent with the view that debt can mitigate agency conflicts. Grossman and Hart (1982) also assert that debt forces managers to conduct operations more efficiently in order to lessen the probability of bankruptcy, loss of control and loss of reputation.

Gul and Tsui (2001) provide supporting evidence that debt is a monitoring device that reduces agency costs. One of the reasons debt reduces agency costs is that debt-holders are expected to monitor managers (Rubin, 1990).

Monitoring by debt-holders will depend on the size of stake the debt-holder has in the business (Daniels, 1995). The higher the debt reliance (leverage), the closer the firm is to the constraints in the debt covenants (Kalay, 1982). Unless firms are reasonably close to violation, it is unlikely that the choice of an accounting method will be monitored by debt restrictions (DeFond and Jiambalvo, 1994). Hence, high leverage justifies a strong monitoring role by debt-holders (OECD, 1995). A negative association between debt reliance and opportunistic earnings management can be an outcome of debt-holders monitoring opportunistic managerial behaviour.

DeFond and Jiambalvo (1994) and Sweeney (1994) find empirical evidence that earnings are managed when debt covenant is violated. However, tested samples in both studies only included firms that reported covenant violations. Thus, both studies bear selection bias due to the exclusion of firms with high debt reliance, but managed to avoid the violation of debt covenant. The avoidance of debt covenant violation by such firms can be an outcome of the external monitoring role that debt-holders play in the governance of borrowing firms. It can be argued that firms, which are unable to avoid debt covenant violation, strategically manage their earnings in preparation for renegotiations relating to debt contracts.

While high debt reliance encourages managers to overcome debt covenant through earnings management (DeFond and Jiambalvo, 1994; Sweeney, 1994), high debt reliance gives managers an incentive to operate efficiently and generate sufficient cash flows to meet its debt obligations (Denis, 2001). Empirical evidence supports the proposition that increased debt mitigates agency conflicts (see Rozeff, 1982; Harris and Raviv, 1991).

Dhaliwal et al. (1991) finds that the explanatory power of earnings is larger for low leverage firms. They argue that leverage is a proxy for default risk. However, Dhaliwal et al. (1991) represents leverage as a dummy variable. Thus, level of debt is used to partition the sample rather than being used as continuous variable. Just simply partitioning the sample according to leverage disregards any information that might relate to the degree of monitoring exercised by debt-holders.

It can be argued that leverage is an indication of a firm's default risk. The present study controls for default risk by including a control variable representing systemic risk (beta risk) when testing debt reliance.

If higher debt reliance increases monitoring over management (Daniels, 1995; OECD, 1995), higher debt reliance should decrease management's capacity to alter accounting earnings and increase the reliability earnings. No prior study has tested the association between debt reliance, as a monitoring device, and earnings management.

Earnings management can also reflect the strength of management's incentive to manage earnings. Once managers have no incentive to manage earnings opportunistically, they act according to the interest of shareholders, and thus debt reliance is not expected to have an impact on shareholders' perception of accounting earnings.

Given the impact of debt reliance is likely to influence earnings management and earnings reliability, high debt reliance should affect shareholders' perception of earnings

reliability and relevance after conditioning on earnings management. Thus, less reliable earnings associated with high debt reliance are perceived by shareholders to be more value relevant than those associated with lower debt reliance.

As shareholders perceive that monitoring caused by higher debt reliance reduces earnings management and enhances the reliability and relevance of accounting earnings, the propositions are:

- *High debt reliance is negatively related to earnings management.*
- *High debt reliance is positively related to the information content of accounting earnings.*²⁷
- *Managers' incentive to manage earnings moderates the positive association between high debt reliance and the information content of accounting earnings.*²⁸

2.5.1.3 Board Independence

The board of directors is the shareholders' first line of defense against management's opportunistic behaviour (Weisbach, 1988; Sundaramurthy, 2000). Boards of directors have three major responsibilities in a firm (Lawler et al., 2002; Kenton, 1995). First, they are responsible for the strategic direction of the firm (Kesner and Johnson, 1990; Lorsch and MacIver, 1989). Second, they provide advice and a base for networking into the corporate community (Westphal, 1999; Lorsch and MacIver, 1989). Third, they exercise a monitoring function over executive management on behalf of shareholders (Johnson et al., 1996; Bainbridge, 1993; Fama, 1980). It is the third

²⁷ The proposition incorporates a boundary condition that only includes highly debt reliant firms to overcome the confounding effect of firms with perceived limited monitoring contributions.

²⁸ The proposition incorporates two boundary conditions. First, debt reliance must be high to overcome the confounding effect of firms with perceived limited monitoring contributions. Second, the proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

responsibility that should have a direct impact on shareholders' perception of the firm's financial reporting integrity.

Boards of directors monitor management by ensuring that executive managers carry out their duties in a way that serves the best interests of shareholders (Fama and Jensen, 1983). However, not all boards are vigilant monitors of corporate management (Sundaramurthy, 2000).

While Fama (1980) asserts that insider dominated boards have a problem of self-monitoring and particularly weak monitoring over executive officers, Lawler et al. (2002) also provides data showing that board independence is an important factor in enhancing the monitoring function of the board.²⁹ The results of Tsui et al. (2001) also support the expectation that firms with independent boards provide an effective monitoring mechanism. Previous studies empirically show that board independence is positively associated with board monitoring (See Table 2-3).³⁰

²⁹ One of the tests performed in Lawler et al. (2002) measures the association between different board attributes and a firm's financial and market performance. They found that board independence has the largest direct impact on share returns. Their finding supports the view that board independence should affect shareholders' perception of a firm's accounting earnings.

³⁰ The Sarbanes-Oxley Act (2002) defines an independent director as a director who:

- Does not accept, directly or indirectly, any consulting, advisory, or other compensatory fee from the company apart from his/her role as a member of the board of directors and its committees.
- Is not an affiliated person of the company or any of its subsidiaries.
- Does not directly or indirectly controls the company, is controlled by the company, or is under control along with the company by an executive officer, director, or 10% shareholder.
- Is not a director, executive officer, partner, member, principal, or designee of an affiliated firm.

Table 2-3: Board Independence and Board Monitoring

<i>Studies</i>	<i>Findings</i>
Weisbach (1988)	A stronger association was found between prior performance and the probability of a CEO resignation for firms with outsider-dominated boards than for firms with insider-dominated boards.
Rosenstein and Wyatt (1990)	The appointment of an outside director who is an officer of a financial firm increases share value.
Byrd and Hickman (1992)	Less-negative returns to shareholders of bidding firms are associated with boards of directors in which at least 50% of the members are independent of firm managers.
Brickley et al. (1994)	The average stock market reaction to announcements of poison pills is positive when the board has majority of outside directors and negative when it does not.

Board independence is established on the assumption that outside directors are more vigilant than inside directors because:

1. Outside directors focus on financial performance, which is a central component of monitoring (Fama and Jensen, 1983).
2. Outside directors are more likely than insiders to dismiss CEOs following poor performance (Weisbach, 1988).
3. Outside directors have an incentive to protect their personal reputations as independent directors by vigilantly monitoring management (Fama and Jensen, 1983).

In spite of the above, there is an absence of studies empirically examining the impact of board independence on shareholders' perception of accounting earnings. Only Vafeas (2000) and Anderson et al. (2003) have attempted to examine the impact on the market's response to accounting earnings. While Vafeas (2000) failed to detect a link

between board independence and information content of earnings, Anderson et al. (2003) find that board independence is positively related to the information content of earnings.³¹

The results from Vafeas (2000) are not surprising because Vafeas' (2000) sample contains survivorship bias. The problem with Vafeas (2000) excluding failing firms is that managers of failing firms tend to have an incentive to manage earnings as a last means of survival. Thus, Vafeas' (2000) sample contains firms that on average have a less incentive to manage earnings, which is likely to explain the reason Vafeas (2000) was unable to detect the impact of board independence on shareholders' perception of accounting earnings. Thus, Vafeas' (2000) failure to detect an impact is not sufficient evidence that the link does not exist.

The current study extends the investigations of Vafeas (2000) and Anderson et al. (2003) by including two portions. First, Vafeas (2000) and Anderson et al. (2003) use a single proxy for unexpected earnings. Brown et al. (1987) demonstrates that multiple proxies for unexpected earnings is likely to reduce measurement error bias in regression estimates of the coefficients relating to unexpected earnings and unexpected returns. Easton and Harris (1991) also provide empirical evidence that the level of earnings enhances the returns-earnings relationship. It is difficult to detect the impact of board independence when the returns-earnings relationship lacks a comprehensive reflection of shareholders' response to accounting earnings. Consequently, the present study uses multiple proxies for unexpected earnings.

Second, Vafeas (2000) and Anderson et al. (2003) did not account of the important role the existence of an incentive for managers to manage earnings may play in the

³¹Although Anderson et al. (2003) supports the current study's expectations, their results are limited by testing a single financial period and using a single proxy for unexpected earnings when testing the returns-earnings regression.

relation between corporate governance and information content of accounting earnings. Earnings management reflects the strength of management's incentive to manage earnings. Once managers have no incentive to manage earnings opportunistically, they act according to the interest of shareholders, and thus board independence should not have an impact on shareholders' perception of accounting earnings. The link is strengthened by empirical evidence from the literature supporting the impact of board independence on opportunistic earnings management (e.g. Peasnell et al., 1998, 2000a; Chtourou et al., 2001). As a results, the current study tests the interaction between board independence and the information content of accounting earnings conditioned on earnings management.

Highly independent boards are expected have an impact on shareholders' perception of earnings reliability and relevance after conditioning on earnings management, because stronger board monitoring should enhance the integrity of the financial reporting process and should provide assurance to shareholders on the reliability of reported earnings. Thus, less reliable earnings associated with independent boards are perceived by shareholders to be more value relevant than those associated with insider dominated boards.

As shareholders perceive that monitoring caused by higher board independence reduces earnings management and enhances the information content of accounting earnings, the propositions are:

- *Highly independent boards are negatively related to earnings management.*

- *Highly independent boards are positively related to the information content of accounting earnings.*³²
- *Managers' incentive to manage earnings moderates the positive association between highly independent boards and the information content of accounting earnings.*³³

2.5.1.4 Audit Committee Independence

Boards of directors have to participate in the auditing process, as part of their monitoring responsibilities.³⁴ With the increase in board responsibilities, certain roles are allocated to sub-committees. Kesner (1988) and Vance (1983) maintain that most essential board decisions originate at the committee level, such as audit committees. Audit committees aim to increase the integrity of the financial auditing process (Klein, 2002a) and the quality of financial reporting (McMullen, 1994).

Audit committees can contribute to internal monitoring by increasing the level of integrity to the financial auditing process (Klein, 2002a). Dechow et al. (1996) report that firms without an audit committee are more likely to commit financial fraud.

In September 1998, Securities and Exchange Commission (SEC) Chairman Arthur Levitt attacked the problem of "earnings management" and called for audit committees to improve financial reporting quality and effectively monitor executives. Contrary to the United States and United Kingdom, Australian public companies are currently not required to form audit committees, either by statute or by ASX listing rules. The decision

³² The proposition incorporates a boundary condition that only includes highly independent boards to overcome the confounding effect of firms with perceived limited monitoring contributions.

³³ The proposition incorporates two boundary conditions. First, boards must be highly independent to overcome the confounding effect of firms with perceived limited monitoring contributions. Second, the proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

³⁴ Auditing is an important form of monitoring used by firms to reduce agency costs (Jensen and Meckling, 1976; Watts and Zimmerman, 1986).

of the ASX not to mandate audit committees is in conflict with recommendations of the Working Group on Corporate Practices and Conduct (Bosch Committee) and the Working Party of the Ministerial Council for Corporations, which have recommended audit committees be formed by all companies listed on the ASX (Baxter and Pragasam, 1999).³⁵

While Wild (1994a, 1994b) concludes that the magnitude of the market's reaction to earnings reports is positively influenced by the formation of audit committees, DeFond and Jiambalvo (1991) find that the overstatement of earnings is less likely among firms with audit committees. McMullen (1994) also finds that audit committee existence relates positively to financial reporting quality.

However, the existence of audit committee alone does necessarily lead to effective monitoring. Peasnell et al. (2000a) attempted to associate the existence of an audit committee with earnings management, but did not find a significant relationship. The results from Peasnell et al. (2000a) were not surprising, because the mere existence of an audit committee does not guarantee the efficiency of the monitoring process and the reliability of the financial reporting process. Other factors should be considered when analysing the role of an audit committee in monitoring management's behaviour and performance efficiently, such as directors' independence.

Audit committees should be independent from management to be able to conduct effective monitoring, leading to less opportunistic earnings management.³⁶ Independent audit committees can potentially improve the quality and credibility of financial reporting

³⁵ Given that the formation of audit committees remains essentially unregulated in Australia, audit committee independence is expected to exhibit considerably greater variation than that found in related studies undertaken in other countries, mainly the United States. This variation found in Australian firms provides an improved setting for examining the impact of audit committees.

³⁶ One of the major limitations of using audit committee independence is its supposedly high correlation with board independence. However, such limitation is overcome by checking for collinearity and testing each attribute individually and jointly.

(Guthrie and Turnbull, 1995). Klein (1998) and Verschoor (1993) report that many audit committees of publicly traded companies are not entirely independent. If outside directors sitting on the audit committees lack the balance of power, a potential increase in opportunistic earnings management can be practiced due to weakness in internal monitoring.

Chtourou et al. (2001) find no association between earnings management and a dichotomous variable of whether or not an entirely independent audit committee exists. The results from Chtourou et al. (2001) should not undermine the importance of audit committee independence. As it is essential for independent directors sitting on the audit committees to hold the balance of power, it is not necessary for the audit committee to be made entirely of independent directors to monitor effectively.

Empirical evidence shows that audit committee independence is crucial in reducing earnings management and increasing the information content of accounting earnings. While Klein (2002b) finds that earnings management is associated with a dichotomous variable of whether or not the audit committee has a majority of outside directors, Bryan et al. (2004) find that audit committee independence is positively associated with the information content of accounting earnings.

The present study extends prior studies by investigating the impact of highly independent audit committees on shareholders' perception of the information content of accounting earnings after conditioning on earnings management. The link is built on the notion that independent directors on the audit committee are likely to influence the perception of shareholders on the reliability of earnings when managers have a strong incentive to alter earnings opportunistically.

Earnings management reflects the strength of management's incentive to manage earnings. Once managers have no incentive to manage earnings opportunistically, they act according to the interest of shareholders, and thus audit committee independence should not have a substantial impact on shareholders' perception of accounting earnings.

Highly independent audit committees are expected have an impact on shareholders' perception of earnings reliability and relevance after conditioning on earnings management, because stronger audit committee monitoring should enhance the integrity of the financial reporting process and should provide assurance to shareholders on the reliability of reported earnings. Thus, less reliable earnings associated with independent audit committees are perceived by shareholders to be more value relevant than those associated with insider dominated audit committees.

As shareholders perceive that stronger monitoring encouraged by independent audit committees reduces earnings management and enhances the information content of accounting earnings, the propositions are:

- *Highly independent audit committees are negatively related to earnings management.*
- *Highly independent audit committees are positively related to the information content of accounting earnings.*
- *Managers' incentive to manage earnings moderates the positive association between highly independent audit committees and the information content of accounting earnings.*³⁷

³⁷ The proposition incorporates a boundary condition. The proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

2.5.1.5 Audit Committee Competence

Audit committee competence is a comprehensive attribute that reflects efficient monitoring and should provide shareholders with a clear perception about accounting earnings. Audit committee competence is defined as a combination of independence and expertise, and is measured by the portion of outside directors with financial expertise sitting on the audit committee.³⁸ Financial expertise typically is based on employment experience or certification in accounting /finance (PricewaterhouseCoopers, 2000).

Motivated by recent regulatory requirements (i.e. Sarbanes-Oxley Act, 2002; Blue Ribbon Panel, 1999) that public companies disclose whether they have independent directors with financial expert on their audit committee, the impact of independent directors' financial expertise on the audit committee is selected as a corporate governance attribute contributing to the integrity of the financial reporting process. This regulatory requirement is motivated by the view that independent directors are more likely to use their expertise to detect and prevent opportunistic managerial behaviour and benefit shareholders.

While different areas of director expertise may be valuable to the firm, corporate or financial expertise is an essential requirement for directors sitting on the audit committee to carry out their responsibilities successfully. The Blue Ribbon Panel's report (1999) assumes that members with no experience in accounting or finance are less likely to be able to detect problems in financial reporting.

The inclusion of competence as an attribute is supported by the findings from McMullen and Randghun (1996) who find that firms under investigation from the

³⁸ Financial expertise is defined broadly as past employment experience in finance or accounting, certification in accounting, or other comparable experience resulting in the individual's financial sophistication (PricewaterhouseCoopers 2000a, 4). Also see footnote 26 for the Sarbanes-Oxley Act (2002) definition of an independent director.

Securities and Exchange Commission are less likely to have financially literate members on their audit committee. While DeZoort and Salterio (2001) finds that auditor-management disputes are more when audit committee members lack financial expertise, Abbott et al. (2002) show that financial misstatements are less likely to occur in firms with audit committees that have a financial expert.

Given that independent directors' expertise is an important determinant of the extent of their monitoring effectiveness, an independent director with no corporate or financial background may be a well-intentioned monitor, except is not likely to have the financial sophistication to identify earnings manipulations (i.e. earnings management). In contrast, an independent director with corporate or financial background is likely to be more familiar with the different forms of earnings manipulations (Xie et al., 2003).

Following this line of reasoning, independent directors with financial expertise sitting on the audit committee are likely to provide valuable monitoring. Their level of monitoring is expected to enhance the integrity of financial reporting process and the reliability of reported earnings by constraining the extent of earnings management.

Chtourou et al. (2001) empirically demonstrates that the presence of at least one member with financial expertise sitting on the audit committee is negatively related to the level of earnings management. After classifying audit committee member into six groups, Xie et al. (2003) finds a negative association between the proportion of audit committee members with corporate or investment banking backgrounds and the level of earnings management.³⁹

³⁹ Xie et al. (2003) fail to detect a significant link between the other four groups of audit committee members (i.e. Finance, Commercial banking, Legal, and Blockholder) and the level of earnings management. Given that prior studies support the link (e.g. DeZoort and Salterio, 2001), the findings of Xie et al. (2003) are not strong evidence that the link does not exist.

Consequently, highly competent audit committees are expected to have an impact on shareholders' perception of earnings reliability and relevance after conditioning on earnings management, because the link is built on the notion that outside directors with financial expertise are efficient monitors and would have the experience or the training to understand and detect opportunistic earnings management. Thus, stronger monitoring should enhance the integrity of the financial reporting process and should provide assurance to the shareholders on the reliability of reported earnings. Bryan et al. (2004) find that financially literate audit committees are positively associated with the information content of accounting earnings.

As shareholders perceive that monitoring caused by financially literate independent directors dominating the audit committee reduces earnings management and enhances the reliability and relevance of earnings, the propositions are:⁴⁰

- *Highly competent audit committees are negatively related to earnings management.*
- *Highly competent audit committees are positively related to the information content of accounting earnings.*
- *Managers' incentive to manage earnings moderates the positive association between highly competent audit committees and the information content of accounting earnings.*

⁴⁰ The proposition incorporates two boundary conditions. First, audit committees must be highly competent to overcome the confounding effect of firms with perceived limited monitoring contributions. Second, the proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

2.5.2 Interests' Alignment

2.5.2.1 Managerial Ownership

Based on agency theory arguments (Jensen and Meckling 1976), managers with a high ownership interest in the firm are less likely to alter earnings for short term private gains at the expense of outside shareholders. This is consistent with the idea that managers whose interests are aligned with shareholders are more likely to report earnings that reflect the underlying economic value of the firm (Warfield et al. 1995).

The empirical literature finds that firm value is higher when officers and directors have greater equity ownership (e.g. Agrawal and Knoeber, 1996; Yermack, 1996; Mehran, 1995).⁴¹ However, it can be argued that the increase in value is not an outcome of positive increase in performance; it is rather the market's perception of the reliability of the financial reporting process. It should also be noted that the focus of the study is on the role managerial ownership plays in improving earnings reliability and financial reporting integrity and not share performance.

More concentrated share holdings by insiders provide a greater alignment of interests between managers and shareholders (Singh and Harianto, 1989; Jensen and Meckling, 1976). Several studies find empirical support to the argument that capital market pressure leads firms with low managerial ownership to make income-increasing accounting choices that do not reflect the underlying firm economics (e.g. Klassen, 1997; Stein, 1989; Jensen, 1986).

Alexander and Cohen (1999) examine the relationship between ownership structure and corporate crime. They find that corporate crime occurs less frequently among firms

⁴¹ While evidence from the United Kingdom finds a linear relationship between managerial ownership and performance (e.g. Thompson et al., 1992), empirical literature from the United States suggests that the relationship is non-linear (e.g. Kole, 1995; McConnell and Servaes, 1995, 1990; Morck et al., 1988). However, the impact on performance is not the focus of the current study.

with larger managerial ownership, which is consistent with evidence that ownership structure plays an important role in aligning the hidden actions of top management with the interest of the shareholders.

If higher managerial ownership increases the alignment of interests between managers and shareholders (e.g. Singh and Harianto, 1989; Jensen and Meckling, 1976), higher managerial ownership should increase the reliability earnings. While several empirical studies find a negative association between insiders' ownership and earnings management (Gul et al., 2003; Klein, 2002b; Warfield et al., 1995), Warfield et al. (1995) and Gul et al. (2003) find that managerial ownership is positively related the explanatory power of earnings.

One implication of Warfield et al. (1995) is that high levels of managerial ownership provide managers with a long-term horizon. In contrast, managers in firms with low managerial ownership have a short-term horizon where managers exploit accounting choices to alleviate accounting-based contractual constraints, presumably to ensure job preservation (annual salary) and maximize incentive compensation (annual bonus) (Nagy et al., 1999). In contrast, managerial ownership is expected to undo the effects of short-term compensation horizons by inducing managers to align their interests with the long-term performance of firms that employ them.

Given the impact of managerial ownership is likely to influence earnings management and shareholders' perception of earnings, high managerial ownership should affect shareholders' perception of earnings reliability and relevance after conditioning on earnings management. Thus, less reliable earnings associated with high managerial ownership are perceived by shareholders to be more value relevant than those associated with lower managerial ownership.

As shareholders perceive that higher managerial ownership reduces earnings management and enhances the reliability and relevance of accounting earnings, the propositions are:

- *High managerial ownership is negatively related to earnings management.*
- *High managerial ownership is positively related to the information content of accounting earnings.*⁴²
- *Managers' incentive to manage earnings moderates the positive association between high managerial ownership and the information content of accounting earnings.*⁴³

2.5.2.2 Independent Directors' Ownership

Ownership by independent directors is expected to enhance their monitoring capacity. When independent directors hold shares of the same firm, they have a greater incentive to fire an underperforming CEO and observe opportunistic managerial behaviour (Bhagat and Black, 1999; Bhagat et al., 1999).

It can be argued that ownership by independent directors may affect their incentive to monitor performance of executives. However, the Hampel report (1997) noted that 'the payment of part of a non-executive directors' remuneration in shares can be useful and legitimate way of aligning the directors' interests with those of shareholders'.

Bhagat and Black (1999) empirically support the view that independent directors perform better if they have stronger share-based incentives. This can be rationalised by increased liability of independent directors if weaker monitoring is exercised. Prior

⁴² The proposition incorporates a boundary condition that only includes firms with high managerial ownership to overcome the confounding effect of firms with perceived limited monitoring contributions.

⁴³ The proposition incorporates two boundary conditions. First, managerial ownership must be high to overcome the confounding effect of firms with perceived limited monitoring contributions. Second, the proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

studies suggest that large equity stakes held in the firm by non-executive directors are likely to give them greater incentive to monitor executive directors than those without such a stake (e.g. Shivdasani, 1993; Jensen, 1989).

Beasley (1996) provides empirical evidence of a negative association between financial reporting fraud and non-executive directors' ownership. Gerety and Lehn (1997) also report that accounting fraud is negatively associated with directors' ownership.

If higher independent directors' ownership increases their incentive to monitor managers (e.g. Shivdasani, 1993; Jensen, 1989), higher independent directors' ownership should increase the reliability of earnings. Chtourou et al. (2001) finds a negative association between earnings management and ownership by non-executive directors.

Given the impact of independent directors' ownership is likely to influence earnings management and shareholders' perception of earnings reliability, high independent directors' ownership should affect shareholders' perception of earnings reliability and relevance after conditioning on earnings management. Thus, less reliable earnings associated with high independent directors' ownership are perceived by shareholders to be more value relevant than those associated with lower managerial ownership.

While no prior studies examined the link between independent directors' ownership and the information content of accounting earnings, the previous line of reasoning indicates that independent directors' ownership increases the monitoring capacity over the financial reporting process. As shareholders perceive independent directors' ownership to reduce earnings management and to enhance the reliability and relevance of accounting earnings, the propositions are:

- *High independent directors' ownership is negatively related to earnings management.*
- *High independent directors' ownership is positively related to the information content of accounting earnings.*⁴⁴
- *Managers' incentive to manage earnings moderates the positive association between high independent directors' ownership and the information content of accounting earnings.*⁴⁵

2.5.3 Governance Structure

2.5.3.1 Board Size

From an agency perspective, it can be argued that a larger board is more likely to be vigilant for agency problems simply because a greater number of people will be reviewing management actions (Kiel and Nicholson, 2003). The evidence on the role of board size is inconclusive (e.g. Dalton et al., 1999; Eisenberg et al., 1998; Yermack, 1996). However, most of these studies focused on the role of board size in enhancing performance rather its role in improving the integrity of the financial reporting process.

Given that the major role of the board is to monitor management, the literature on board size is reviewed only from a monitoring perspective. John and Senbet (1998) argue that an increase in board size increases the board's monitoring capacity. Xie et al. (2003) and Chtourou et al. (2001) empirically support this argument by finding that larger boards are strongly associated with lower levels of earnings management.

⁴⁴ The proposition incorporates a boundary condition that only includes firms with high independent directors' ownership to overcome the confounding effect of firms with perceived limited monitoring contributions.

⁴⁵ The proposition incorporates two boundary conditions. First, independent directors' ownership must be high to overcome the confounding effect of firms with perceived limited monitoring contributions. Second, the proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

While Beasley (1996) finds a positive relationship between board size and the likelihood of fraud, Abbott et al. (2000) find no relationship. Chaganti et al. (1985) suggest that large boards are valuable for the breadth of their services. They suggest that a larger board is more effective in preventing corporate failure.

Lipton and Lorsh (1992) and Jensen (1993) for instance, argue that because of difficulties in organizing and coordinating large groups of directors, board size is negatively related to the board's ability to advise and engage in long-term strategic planning. In contrast, Adams and Mehran (2002) and Yermack (1996) suggest that some firms require larger boards for effective monitoring.

Although the findings relating to the role of board size are mixed, the current study proposes that larger boards are likely to reduce earnings management and increase the reliability and value relevance of earnings due to the following reasons:

1. Increased board size leads to diversity, which is likely to yield benefits by creating a network with the external environment and securing a broader resource base (Pfeffer, 1973; Pearce and Zahra, 1992). Larger boards are likely to provide more expertise (Dalton et al., 1999).
2. As boards become larger, they are likely to include more independent directors with valuable experience (Xie et al., 2003). Experienced independent directors are expected to be better at preventing or limiting managerial opportunistic behaviour (i.e. earnings management).
3. Larger boards are more likely to delegate responsibilities to board committees than smaller boards (Menon and Williams, 1994). The formation of sub-committees due to larger boards is likely to provide greater monitoring benefits than smaller boards (Klein, 2002a).

4. Committees composed from larger boards are likely to gain from a more diverse expertise than smaller boards.

Vafeas (2000) concludes that smaller boards give higher explanatory power of earnings. However, the results from Vafeas (2000) were inconsistent and should not be generalised due to the following reasons:

1. When using board size as a continuous variable the results were insignificant.
2. Firms with five to ten directors on the board were positively associated with earnings response coefficients.
3. While firms with twelve directors or more were negatively associated with earnings response coefficients, the association was insignificant when testing firms with fourteen directors or more.

Due to these reasons, the findings from Vafeas (2000) relating to board size are inconsistent and inconclusive. Alonso et al. (2000) also provides results that display a strong positive association between board size and earnings management. Alonso et al. (2000) argues that large boards imply poorer coordination and communication between directors.

Alonso et al. (2000) has certain limitations:

1. The results cover only one financial period.
2. While the sample used mixed data from ten different OECD countries, the study did not control for the difference in accounting principles and corporate governance regulations among these countries when testing the research question.

The results of Alonso et al. (2000) may be biased due to lack of control for external factors (i.e. accounting standards and regulatory rules). In addition, other studies provide evidence of board size's role in enhancing monitoring over management. Klein (2002a)

for instance, suggests that board monitoring is positively associated with board size due to the ability to distribute the work load over a greater number of observers. Monks and Minow (1995) and Lipton and Lorsch (1992) extend this argument by suggesting that larger (smaller) boards are able to commit more (less) time and effort to overseeing management.

If large boards reduce earnings management (Xie et al., 2003; Chtourou et al., 2001) and are more effective monitors of the financial accounting process (Adams and Mehran, 2002; Yermack, 1996), then the information content of accounting earnings should increase with board size due to the increase in earnings reliability. This leads to following proposition:

- *Larger boards are negatively related to earnings management.*
- *Larger boards are positively related to the information content of accounting earnings.*⁴⁶
- *Managers' incentive to manage earnings moderates the positive association between larger boards and the information content of accounting earnings.*⁴⁷

2.5.3.2 CEO dominance

Most Corporate Practice recommendations strongly suggested the separation between the roles of board chairman and the CEO. Corporate governance regulators recognise that CEO dominance over the board as a source of excessive power (Dedman, 2000).

⁴⁶ The proposition incorporates a boundary condition that only includes larger boards to overcome the confounding effect of firms with perceived limited monitoring contributions.

⁴⁷ The proposition incorporates two boundary conditions. First, board size must be high to overcome the confounding effect of firms with perceived limited monitoring contributions. Second, the proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

The role of the board chair is to monitor the CEO (Jensen, 1993). Chairman of the board has the power to control the agenda and the running of the board meetings. There is likely to be a lack of independence between management and the board, if the CEO is also the board chair.

CEO dominance becomes problematic if the interests of the CEO are different from interests of shareholders. Using data from the United States, Yermack (1996) and Rechner and Dalton (1991) show that firms with independent chairmen outperformed firms with CEO dominance. CEO dominance does not necessarily decrease performance; it is likely to influence the market's perception of the level of control exercised over managerial performance and the financial reporting process.⁴⁸

Gul and Leung (2004) find that CEO dominance is associated with lower voluntary corporate disclosure for Hong Kong companies. They argue that CEO dominance combines decision management and decision control, which could erode the board's ability to exercise effective control.

Empirical evidence support the view that CEO dominance is likely to lead to more opportunistic managerial behaviour due to the reduction in effective board monitoring over executives (Finkelstein and D'Aveni, 1994). Core et al. (1999) find that CEO compensation is lower when the CEO and board chair positions are separate. Dechow et al. (1996) also provide evidence that firms whose CEO chairs the board of directors are more likely to be subject to accounting enforcement action by the Securities and Exchange Commission for alleged violations of GAAP. Thus, it is justifiable to assume a positive association between CEO dominance and earnings management.

⁴⁸ In the United States, CEO dominance is the norm, while in Australia and the United Kingdom it is not. Therefore there may be cultural difference. As a result, what holds for the United States may not hold for Australia.

Anderson et al. (2003) find that the separation between CEO and board chair positions appear to positively influence the information content of accounting earnings. If CEO dominance decreases monitoring over management (Dechow et al., 1996; Finkelstein and D'Aveni, 1994), CEO dominance should decrease the reliability earnings.⁴⁹

Unlike prior studies, this study defines CEO dominance in terms of the independence of the chairman rather than CEO duality. The reason it is defined differently from prior studies is that the chairman is less likely to hold the CEO accountable if the board chair is a person who is not independent of management (i.e. current or past executives).

Given that CEO dominance should influence earnings management and earnings reliability, CEO dominance is expected to affect shareholders' perception of earnings reliability and relevance after conditioning on earnings management. Thus, reliable earnings associated with CEO dominance are perceived by shareholders to be less value relevant than those associated with independent chairmen.

As shareholders perceive that reduction of monitoring caused by CEO dominance increases earnings management and reduces the reliability and relevance of accounting earnings, the propositions are:

- *CEO dominance is positively related to earnings management.*
- *CEO dominance is negatively related to the information content of accounting earnings.*

⁴⁹ Chtourou et al. (2001) and Xie et al. (2003) find no association between CEO dominance and earnings management. The current study defines CEO dominance differently from these studies.

- *Managers' incentive to manage earnings moderates the negative association between CEO dominance and the information content of accounting earnings.*⁵⁰

2.6 LIMITS

As with the development of any model, the process of abstracting from reality introduces a number of limitations into the model. The major limitations of the model are as follows:

- The model applies only to large firms where there is a clear separation between ownership and management. This is called a “Berle-Means” world (Stiglitz, 1999).⁵¹
- Corporate governance practices might be driven by poor financial results. Endogeneity problems in empirical corporate governance research are large, but not critical (Denis, 2001). Dealing with this problem requires carefully designed tests and cautious interpretation of the results.⁵²
- If other corporate governance attributes contribute to the integrity of the financial reporting process, then parameter estimates may be biased.

⁵⁰ The proposition incorporates a boundary condition. The proposed link should be conditioned by the existence of an incentive for managers to manage earnings to reflect the deviation of managers' interests from the interests of shareholders.

⁵¹ Berle and Means (1932) emphasised the separation of share ownership and managerial control. The shareholder exercises full clear-cut property rights over the shares, that is, to buy, hold, or sell the shares. But no organized decision-making unit owns the company as its private property.

⁵² The problem is dealt with, in this study, through vigilant collection of the data and through a research method that isolates endogenous problems. While data relating to corporate governance practices are selected for the duration of the period, financial data are selected for the ending financial year. Thus, the practices of corporate governance precede the financial results, which controls for endogenous problems relating to corporate governance. The cross-sectional approach in analysing the data also isolates any problems relating to endogeneity that accompany the time-series approach.

- Given that the model is tested using archival data, the data are likely to contain the influences of several factors that are not accounted for in the model. Isolating the impact of the constructs on the market's reaction may prove difficult.

2.7 SUMMARY OF THE CHAPTER

The academic literature and corporate governance regulators acknowledge the impact of corporate governance attributes on the integrity of the financial reporting process. Chapter Two developed a theoretical model of the links among corporate governance, earnings management, and the information content of accounting earnings.

A number of theoretical propositions emerge from the discussion in this chapter. The propositions relate to the links among corporate governance, earnings management, and the information content of accounting earnings. As corporate governance is represented by nine attributes, the propositions relating to corporate governance are expressed in general terms as the directionality of the relationship depends on the nature of each corporate governance attribute.

Proposition One: Corporate governance is associated with earnings management.

Proposition Two: Earnings Management is negatively associated with the information content of earnings.

Proposition Three: Corporate governance is associated with the information content of earnings.

Proposition Four: Managers' incentive to manage earnings moderates the association between corporate governance and the information content of earnings.

CHAPTER THREE: RESEARCH DESIGN

3.1 INTRODUCTION

Chapter One identified earnings reliability as the problem area of the research. Chapter Two developed a theoretical link among corporate governance, earnings management, and the information content of accounting earnings. Chapter Three describes the research method used to empirically test the propositions developed in Chapter Two.

Chapter Three proceeds as follows: Section 3.2 gives an overview of the research design. Section 3.3 describes the sample selection and data collection procedures. Section 3.4 describes the operationalisation of the constructs in the model. Sections 3.5 states the analysis procedures undertaken. Section 3.6 summarises the chapter.

3.2 OVERVIEW OF RESEARCH DESIGN

When testing earnings management and the information content of accounting earnings, the following methods were adopted:

- The earnings response coefficient is used to measure the information content of accounting earnings.

- The magnitude of abnormal accruals is used as a proxy for managers' capacity to act opportunistically (Hypothesis One), as an indicator of earnings reliability (Hypothesis Two), and as a boundary condition to determine management's incentive to manage earnings (Hypothesis Four).
- OLS regression is used to estimate abnormal accruals as measured by the modified Jones (Dechow et al., 1995) model.

When testing variables representing corporate governance, the analysis is carried out via three stages. First, the relationship between the magnitude of abnormal accruals and corporate governance variables is tested in Hypothesis One. The second stage assesses the relationship between corporate governance variables and the earnings response coefficients. This is tested in Hypothesis Three. The third stage of the analysis examines the impact of corporate governance variables on the earnings response coefficients after conditioning on the magnitude of abnormal accruals. This is a test of Hypothesis Four.

The following provides a general overview of the research design introduced in the chapter:

1. The research uses market and corporate disclosure data collected from annual reports and share markets to empirically test indicators of corporate governance, earnings management and the information content of accounting earnings.
2. The 1996/1997-1999/2000 financial years are the study period. Australian companies were required by the ASX listing rules to disclose corporate governance practices after 30th June 1996.
3. The targeted sample is the top 500 listed companies on the Australian Stock Exchange (ASX) as at 30th June of each financial year during the study period.

4. Financial, mining and regulated industries are excluded from the sample due to their different nature and uncommon practices.
5. The returns-earnings relationship is represented using an empirical model from Easton and Harris (1991), which incorporates the level of earnings and change in earnings.
6. Share returns are based on annual returns accumulated over the 12 months extending from nine months prior to through three months after each firm's respective fiscal year-end (e.g. Easton and Harris, 1991; Ali, 1994; Cheng et al., 1996).
7. Due to the independence of corporate governance attributes over time, a cross-sectional approach is used to test the empirical models.
8. The proposed models are tested using pooled GLS regression, mean coefficients and the Wald test.⁵³

The following sections present the proposed models and state the hypotheses based on the propositions from Chapter Two.

3.2.1 Corporate Governance-Earnings Management Model

The study uses regression to estimate the model with earnings management as the dependent variable and corporate governance as the independent variables. The objective of the model is to provide an assessment of the impact of corporate governance on earnings management.

⁵³ Factor analysis was used in an attempt to arrive at factor scores for important variables. The results were inconclusive and inconsistent across the study period.

Equation 3: The association between the empirical indicators of corporate governance and the empirical indicator of earnings management.

$AAA_j = \gamma_0 + \gamma_1 OWNCON_{jt} + \gamma_2 CEO_{jt} + \gamma_3 BRDSZE_{jt} + \gamma_4 BRDIND_{jt} + \gamma_5 AUDIND_{jt} + \gamma_6 AUDCMP_{jt} + \gamma_7 OWNOUT_{jt} + \gamma_8 OWNMAN_{jt} + \gamma_9 DEBTRL_{jt} + v_j$	
AAA_{jt}	the absolute value of the residual from the modified Jones (Dechow et al., 1995) model.
$OWNCON_{jt}$	the percentage of total shares held by the top 20 shareholders divided by the total number of shares.
CEO_{jt}	Equals 1 if the chairman of the board is not an independent director. Otherwise, $CEO_{jt} = 0$.
$BRDSZE_{jt}$	the number of directors on the board.
$BRDIND_{jt}$	the number of independent directors divided by the total number of directors on the board.
$AUDIND_{jt}$	the number of independent directors on the audit committee divided by the total number of directors on the audit committee.
$AUDCMP_{jt}$	the number of independent directors with financial expertise on the audit committee divided by the total number of directors on the audit committee.
$OWNOUT_{jt}$	the percentage of total shares held by independent directors divided by the total number of shares.
$OWNMAN_{jt}$	the percentage of total shares held by executive directors divided by the total number of shares.
$DEBTRL_{jt}$	total long-term borrowings divided by total assets.

Using US and UK data, prior studies found a significant association between corporate governance and earnings management. Similar results are anticipated in this study using Australian data. While CEO dominance is expected to display a positive association with the magnitude of abnormal accruals, all other corporate governance variables are expected to display a negative association with the magnitude of abnormal accruals.

Hypothesis One: The coefficients of regressing the magnitude of abnormal accruals on the empirical indicators of corporate governance are statistically different from zero.⁵⁴

⁵⁴ As corporate governance is represented by nine variables, there are nine sub-hypotheses and the primary hypothesis is expressed in general terms as the directionality of the coefficient depends on the nature of each corporate governance variable.

Hypothesis One can be stated in terms of the regression coefficients from Equation 3 (see Table 3-1).

Table 3-1: Hypothesis One

Hypothesis One A: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of ownership concentration is statistically less than zero.	
H1A₀: $\gamma_1 \geq 0$,	H1A₁: $\gamma_1 < 0$
Hypothesis One B: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of CEO dominance is statistically greater than zero.	
H1B₀: $\gamma_2 \leq 0$	H1B₁: $\gamma_2 > 0$
Hypothesis One C: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of board size is statistically less than zero.	
H1C₀: $\gamma_3 \geq 0$	H1C₁: $\gamma_3 < 0$
Hypothesis One D: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of board independence is statistically less than zero.	
H1D₀: $\gamma_4 \geq 0$	H1D₁: $\gamma_4 < 0$
Hypothesis One E: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of audit committee independence is statistically less than zero.	
H1E₀: $\gamma_5 \geq 0$	H1E₁: $\gamma_5 < 0$,
Hypothesis One F: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of audit committee competence is statistically less than zero.	
H1F₀: $\gamma_6 \geq 0$	H1F₁: $\gamma_6 < 0$
Hypothesis One G: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of independent director's ownership is statistically less than zero.	
H1G₀: $\gamma_7 \geq 0$	H1G₁: $\gamma_7 < 0$
Hypothesis One H: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of managerial ownership is statistically less than zero.	
H1H₀: $\gamma_8 \geq 0$	H1H₁: $\gamma_8 < 0$
Hypothesis One I: The coefficient of regressing the magnitude of abnormal accruals on the empirical indicator of debt reliance is statistically less than zero.	
H1I₀: $\gamma_9 \geq 0$	H1I₁: $\gamma_9 < 0$

3.2.2 Earnings Management-Earnings Informativeness Model

The study uses the Easton and Harris (1991) model to capture the additional information provided by the empirical indicator of earnings management to the returns-earnings regression. As the explanatory power of earnings may be affected by the reliability of earnings, it is expected that the empirical indicator of earnings management reduce the earnings response coefficients and increase the overall explanatory power of earnings (see Equation 4).

Equation 4: The association between the empirical indicator of earnings management and the returns-earnings (Easton and Harris, 1991) model.

$AR_j = \beta_0 + \alpha_0 E_{jt} + \alpha_1 E_{jt} AAA_{jt} + \psi_0 \Delta E_{jt} + \psi_1 \Delta E_{jt} AAA_{jt} + \zeta_j$	
AR_{jt}	the annual return accumulated for firm j for nine months prior to through three months after fiscal year-end.
E_{jt}	earnings per share scaled by beginning price, before extraordinary items.
ΔE_{jt}	change in earnings per share and then scaled by beginning of period price for firm j.

It is expected that the magnitude of abnormal accruals display a negative association with the earnings response coefficients. Table 3-2 displays Hypothesis Two.

Table 3-2: Hypothesis Two

Hypothesis Two: The interaction between the magnitude of abnormal accruals and earnings is less than the coefficient for earnings in the absence of abnormal accruals.	
H2₀: $(\alpha_0 + \alpha_1) \geq \beta_1, (\psi_0 + \psi_1) \geq \beta_2$	H2₁: $(\alpha_0 + \alpha_1) < \beta_1, (\psi_0 + \psi_1) < \beta_2$

3.2.3 Corporate Governance-Earnings Informativeness Model

The Easton and Harris (1991) model is also used to capture the additional information provided by the empirical indicators of corporate governance to the returns-earnings regression. As the explanatory power of earnings may be affected by the

reliability of earnings, it is expected that the empirical indicators of corporate governance increase the earnings response coefficients and the overall explanatory power of earnings (see Equation 5).⁵⁵ Appendix D explains the development of Equation 5.

Equation 5: The association between the empirical indicators of corporate governance and the returns-earnings (Easton and Harris, 1991) model.

$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi_1 E_{jt} D_{1OWNCON_{jt}} + \varphi_2 E_{jt} CEO_{jt} + \varphi_3 E_{jt} D_2 BRDSZE_{jt} + \varphi_4 E_{jt} D_3 BRDIND_{jt} + \varphi_5 E_{jt} AUDIND_{jt} + \varphi_6 E_{jt} D_4 AUDCMP_{jt} + \varphi_7 E_{jt} D_5 OWNOUT_{jt} + \varphi_8 E_{jt} D_6 OWNMAN_{jt} + \varphi_9 E_{jt} D_7 DEBTRL_{jt} + \lambda_0 \Delta E_{jt} + \lambda_1 \Delta E_{jt} D_{1OWNCON_{jt}} + \lambda_2 \Delta E_{jt} CEO_{jt} + \lambda_3 \Delta E_{jt} D_2 BRDSZE_{jt} + \lambda_4 \Delta E_{jt} D_3 BRDIND_{jt} + \lambda_5 \Delta E_{jt} AUDIND_{jt} + \lambda_6 \Delta E_{jt} D_4 AUDCMP_{jt} + \lambda_7 \Delta E_{jt} D_5 OWNOUT_{jt} + \lambda_8 \Delta E_{jt} D_6 OWNMAN_{jt} + \lambda_9 \Delta E_{jt} D_7 DEBTRL_{jt} + \varepsilon_j$	
D_{1j}	Equals 1 if OWNCON _j is greater than its yearly cross-sectional median. Otherwise, D_{1j} = 0.
D_{2j}	Equals 1 if BRDSZE _j is greater than its yearly cross-sectional median. Otherwise, D_{1j} = 0.
D_{3j}	Equals 1 if BRDIND _j is greater than its yearly cross-sectional median. Otherwise, D_{1j} = 0.
D_{4j}	Equals 1 if AUDCMP _j is greater than its yearly cross-sectional median. Otherwise, D_{1j} = 0.
D_{5j}	Equals 1 if OWNOUT _j is greater than its yearly cross-sectional median. Otherwise, D_{1j} = 0.
D_{6j}	Equals 1 if OWNMAN _j is greater than its yearly cross-sectional median. Otherwise, D_{1j} = 0.
D_{7j}	Equals 1 if DEBTRL _j is greater than its yearly cross-sectional median. Otherwise, D_{1j} = 0.

While CEO dominance is expected to display a negative association with the earnings response coefficients, all other corporate governance variables are expected to display a positive association with the earnings response coefficients.

Hypothesis Three: The interactions between earnings and the empirical indicators of corporate governance are different from zero and from the coefficient for earnings in the absence of corporate governance.⁵⁶

⁵⁵ Equation five can also be presented in the following format:

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi E_{jt} D_{xj} CG_{jt} + \lambda_0 \Delta E_{jt} + \lambda \Delta E_{jt} D_{xj} CG_{jt} + \varepsilon_j$$

$$D_{xj} CG_{jt} = D_1 OWNCON_{jt} + CEO_{jt} + D_2 BRDSZE_{jt} + D_3 BRDIND_{jt} + AUDIND_{jt} + D_4 AUDCMP_{jt} + D_5 OWNOUT_{jt} + D_6 OWNMAN_{jt} + D_7 DEBTRL_{jt}$$

⁵⁶ As corporate governance is represented by nine variables, there are nine sub-hypotheses and the primary hypothesis is expressed in general terms as the directionality of the coefficient depends on the nature of each corporate governance variable.

Hypothesis Three can be stated in terms of the regression coefficients from Equation 5 (see Table 3-3).

Table 3-3: Hypothesis Three

Hypothesis Three A: The interaction between earnings and the empirical indicator of ownership concentration is different from zero and greater than the coefficient for earnings in the absence of ownership concentration.	
H3A₀: $(\varphi_0 + \varphi_1) \leq \beta_1, (\lambda_0 + \lambda_1) \leq \beta_2$	H3A₁: $(\varphi_0 + \varphi_1) > \beta_1, (\lambda_0 + \lambda_1) > \beta_2$
Hypothesis Three B: The interaction between earnings and the empirical indicator of CEO dominance is different from zero and less than the coefficient for earnings in the absence of CEO dominance.	
H3B₀: $(\varphi_0 + \varphi_2) \geq \beta_1, (\lambda_0 + \lambda_2) \geq \beta_2$	H3B₁: $(\varphi_0 + \varphi_2) < \beta_1, (\lambda_0 + \lambda_2) < \beta_2$
Hypothesis Three C: The interaction between earnings and the empirical indicator of board size is different from zero and greater than the coefficient for earnings in the absence of board size.	
H3C₀: $(\varphi_0 + \varphi_3) \leq \beta_1, (\lambda_0 + \lambda_3) \leq \beta_2$	H3C₁: $(\varphi_0 + \varphi_3) > \beta_1, (\lambda_0 + \lambda_3) > \beta_2$
Hypothesis Three D: The interaction between earnings and the empirical indicator of board independence is different from zero and greater than the coefficient for earnings in the absence of board independence.	
H3D₀: $(\varphi_0 + \varphi_4) \leq \beta_1, (\lambda_0 + \lambda_4) \leq \beta_2$	H3D₁: $(\varphi_0 + \varphi_4) > \beta_1, (\lambda_0 + \lambda_4) > \beta_2$
Hypothesis Three E: The interaction between earnings and the empirical indicator of audit committee independence is different from zero and greater than the coefficient for earnings in the absence of audit committee independence.	
H3E₀: $(\varphi_0 + \varphi_5) \leq \beta_1, (\lambda_0 + \lambda_5) \leq \beta_2$	H3E₁: $(\varphi_0 + \varphi_5) > \beta_1, (\lambda_0 + \lambda_5) > \beta_2$
Hypothesis Three F: The interaction between earnings and the empirical indicator of audit committee competence is different from zero and greater than the coefficient for earnings in the absence of audit committee competence.	
H3F₀: $(\varphi_0 + \varphi_6) \leq \beta_1, (\lambda_0 + \lambda_6) \leq \beta_2$	H3F₁: $(\varphi_0 + \varphi_6) > \beta_1, (\lambda_0 + \lambda_6) > \beta_2$
Hypothesis Three G: The interaction between earnings and the empirical indicator of independent director's ownership is different from zero and greater than the coefficient for earnings in the absence of independent director's ownership.	
H3G₀: $(\varphi_0 + \varphi_7) \leq \beta_1, (\lambda_0 + \lambda_7) \leq \beta_2$	H3G₁: $(\varphi_0 + \varphi_7) > \beta_1, (\lambda_0 + \lambda_7) > \beta_2$
Hypothesis Three H: The interaction between earnings and the empirical indicator of managerial ownership is different from zero and greater than the coefficient for earnings in the absence of managerial ownership.	
H3H₀: $(\varphi_0 + \varphi_8) \leq \beta_1, (\lambda_0 + \lambda_8) \leq \beta_2$	H3H₁: $(\varphi_0 + \varphi_8) > \beta_1, (\lambda_0 + \lambda_8) > \beta_2$
Hypothesis Three I: The interaction between earnings and the empirical indicator of debt reliance is	

different from zero and greater than the coefficient for earnings in the absence of debt reliance.

H3I₀: $(\varphi_0 + \varphi_9) \leq \beta_1, (\lambda_0 + \lambda_9) \leq \beta_2$

H3I₁: $(\varphi_0 + \varphi_9) > \beta_1, (\lambda_0 + \lambda_9) > \beta_2$

As the explanatory power of earnings may be affected by earnings management, it is expected that conditioning on earnings management enhances the overall explanatory power of earnings by improving the association between the empirical indicators of corporate governance and the earnings response coefficients (see Equation 6).⁵⁷ Appendix D explains the development of Equation 6.

Equation 6: The association between the empirical indicators of corporate governance conditioned on the empirical indicator of earnings management and the returns-earnings (Easton and Harris, 1991) model.

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi_1 E_{jt} D_0 D_1 OWNCON_{jt} + \varphi_2 E_{jt} D_0 CEO_{jt} + \varphi_3 E_{jt} D_0 D_2 BRDSZE_{jt} + \varphi_4 E_{jt} D_0 D_3 BRDIND_{jt} + \varphi_5 E_{jt} D_0 AUDIND_{jt} + \varphi_6 E_{jt} D_0 D_4 AUDCMP_{jt} + \varphi_7 E_{jt} D_0 D_5 OWNOUT_{jt} + \varphi_8 E_{jt} D_0 D_6 OWNMAN_{jt} + \varphi_9 E_{jt} D_0 D_7 DEBTRL_{jt} + \lambda_0 \Delta E_{jt} + \lambda_1 \Delta E_{jt} D_0 D_1 OWNCON_{jt} + \lambda_2 \Delta E_{jt} D_0 CEO_{jt} + \lambda_3 \Delta E_{jt} D_0 D_2 BRDSZE_{jt} + \lambda_4 \Delta E_{jt} D_0 D_3 BRDIND_{jt} + \lambda_5 \Delta E_{jt} D_0 AUDIND_{jt} + \lambda_6 \Delta E_{jt} D_0 D_4 AUDCMP_{jt} + \lambda_7 \Delta E_{jt} D_0 D_5 OWNOUT_{jt} + \lambda_8 \Delta E_{jt} D_0 D_6 OWNMAN_{jt} + \lambda_9 \Delta E_{jt} D_0 D_7 DEBTRL_{jt} + \varepsilon_j$$

D_{0j} Equals 1 if the magnitude of abnormal accruals is above its yearly cross-sectional median. Otherwise, **D_{0j}** = 0.

Hypothesis Four: The coefficients for the interaction between earnings and the empirical indicators of corporate governance conditioned on the magnitude of abnormal accruals are different from zero and from the earnings response coefficient in the absence of abnormal accruals and/or corporate governance.⁵⁸

⁵⁷ Equation six can also be presented in the following format:

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi E_{jt} D_0 D_{xj} CG_{jt} + \lambda_0 \Delta E_{jt} + \lambda \Delta E_{jt} D_0 D_{xj} CG_{jt} + \varepsilon_j$$

$$D_{xj} CG_{jt} = D_1 OWNCON_{jt} + CEO_{jt} + D_2 BRDSZE_{jt} + D_3 BRDIND_{jt} + AUDIND_{jt} + D_4 AUDCMP_{jt} + D_5 OWNOUT_{jt} + D_6 OWNMAN_{jt} + D_7 DEBTRL_{jt}$$

⁵⁸ As corporate governance is represented by nine variables, there are nine sub-hypotheses and the primary hypothesis is expressed in general terms as the directionality of the coefficient depends on the nature of each corporate governance variable.

Table 3-4: Hypothesis Four

Hypothesis Four A: The coefficients for the interaction between earnings and the empirical indicator of ownership concentration conditioned on the magnitude of abnormal accruals are different from zero and greater than the earnings response coefficient in the absence of abnormal accruals and/or ownership concentration.	
H4A₀: $(\varphi_0 + \varphi_1) \leq \beta_1, (\lambda_0 + \lambda_1) \leq \beta_2$	H4A₁: $(\varphi_0 + \varphi_1) > \beta_1, (\lambda_0 + \lambda_1) > \beta_2$
Hypothesis Four B: The coefficients for the interaction between earnings and the empirical indicator of CEO dominance conditioned on the magnitude of abnormal accruals are different from zero and less than the earnings response coefficient in the absence of abnormal accruals and/or CEO dominance.	
H4B₀: $(\varphi_0 + \varphi_2) \geq \beta_1, (\lambda_0 + \lambda_2) \geq \beta_2$	H4B₁: $(\varphi_0 + \varphi_2) < \beta_1, (\lambda_0 + \lambda_2) < \beta_2$
Hypothesis Four C: The coefficients for the interaction between earnings and the empirical indicator of board size conditioned on the magnitude of abnormal accruals are different from zero and greater than the earnings response coefficient in the absence of abnormal accruals and/or board size.	
H4C₀: $(\varphi_0 + \varphi_3) \leq \beta_1, (\lambda_0 + \lambda_3) \leq \beta_2$	H4C₁: $(\varphi_0 + \varphi_3) > \beta_1, (\lambda_0 + \lambda_3) > \beta_2$
Hypothesis Four D: The coefficients for the interaction between earnings and the empirical indicator of board independence conditioned on the magnitude of abnormal accruals are different from zero and greater than the earnings response coefficient in the absence of abnormal accruals and/or board independence.	
H4D₀: $(\varphi_0 + \varphi_4) \leq \beta_1, (\lambda_0 + \lambda_4) \leq \beta_2$	H4D₁: $(\varphi_0 + \varphi_4) > \beta_1, (\lambda_0 + \lambda_4) > \beta_2$
Hypothesis Four E: The coefficients for the interaction between earnings and the empirical indicator of audit committee independence conditioned on the magnitude of abnormal accruals are different from zero and greater than the earnings response coefficient in the absence of abnormal accruals and/or audit committee independence.	
H4E₀: $(\varphi_0 + \varphi_5) \leq \beta_1, (\lambda_0 + \lambda_5) \leq \beta_2$	H4E₁: $(\varphi_0 + \varphi_5) > \beta_1, (\lambda_0 + \lambda_5) > \beta_2$
Hypothesis Four F: The coefficients for the interaction between earnings and the empirical indicator of audit committee competence conditioned on the magnitude of abnormal accruals are different from zero and greater than the earnings response coefficient in the absence of abnormal accruals and/or audit committee competence.	
H4F₀: $(\varphi_0 + \varphi_6) \leq \beta_1, (\lambda_0 + \lambda_6) \leq \beta_2$	H4F₁: $(\varphi_0 + \varphi_6) > \beta_1, (\lambda_0 + \lambda_6) > \beta_2$
Hypothesis Four G: The coefficients for the interaction between earnings and the empirical indicator of independent director's ownership conditioned on the magnitude of abnormal accruals are different from zero and greater than the earnings response coefficient in the absence of abnormal accruals and/or independent director's ownership.	
H4G₀: $(\varphi_0 + \varphi_7) \leq \beta_1, (\lambda_0 + \lambda_7) \leq \beta_2$	H4G₁: $(\varphi_0 + \varphi_7) > \beta_1, (\lambda_0 + \lambda_7) > \beta_2$
Hypothesis Four H: The coefficients for the interaction between earnings and the empirical indicator of managerial ownership conditioned on the magnitude of abnormal accruals are different from zero and greater than the earnings response coefficient in the absence of abnormal accruals and/or managerial ownership.	
H4H₀: $(\varphi_0 + \varphi_8) \leq \beta_1, (\lambda_0 + \lambda_8) \leq \beta_2$	H4H₁: $(\varphi_0 + \varphi_8) > \beta_1, (\lambda_0 + \lambda_8) > \beta_2$
Hypothesis Four I: The coefficients for the interaction between earnings and the empirical indicator of debt reliance conditioned on the magnitude of abnormal accruals are different from zero and greater than the earnings response coefficient in the absence of abnormal accruals and/or debt reliance.	
H4I₀: $(\varphi_0 + \varphi_9) \leq \beta_1, (\lambda_0 + \lambda_9) \leq \beta_2$	H4I₁: $(\varphi_0 + \varphi_9) > \beta_1, (\lambda_0 + \lambda_9) > \beta_2$

Details of the study's research design are discussed in different sections of the chapter.

3.3 SAMPLE SELECTION AND DATA COLLECTION PROCEDURES

3.3.1 Study period

The study focuses on the 1996/1997, 1997/1998, 1998/1999 and 1999/2000 financial years because of the following points:

1. Corporate governance listing rules of the Australian Stock Exchange (ASX) became effective on 30th June 1996.⁵⁹ ASX Listing Rule 4.10.3 requires listed companies to disclose their corporate governance practices.⁶⁰
2. During the same study period managers had an incentive to manage earnings in order to smooth the impact of the Asian crisis on financial performance. Corporate governance is expected to be more effective when managers have an incentive to manage earnings.
3. Limiting the study period to four years would make the process of hand-collecting extensive manual data practical.

3.3.2 Sample selection

The selection procedure follows two stages. The first stage commenced with selecting the top 500 Australian listed firms by total market capitalisation as at 30th June of each financial year. Targeting the top 500 Australian listed firms would ensure

⁵⁹ During the study period exchange rates of Asian currencies were affected by the Asian economic crisis. As a result, the impact of gains and losses from foreign exchanges on accounting earnings will be removed from the accounting earnings used in the model. Such a procedure will direct the focus to measuring shareholders' response to change of accounting earnings relating to performance rather change in earnings relating to external economic factors.

⁶⁰ Previously known as ASX Listing Rule 3C(3)(j).

satisfactory statistical power in the tests and would also ensure maximum data availability.

In the second stage, the rest of the sample is retained after excluding regulated, financial and mining industries (see Table 3-5). These industries are excluded due to the following:

1. Revenues in regulated industries are set on fixed accounting rates of return, which gives firms an incentive to adopt conservative accounting practices to defer income recognition. Given that the deferring of income recognition is a common practice for regulated industries, it would be hard to uncover management's opportunistic manipulations.
2. Financial industries are excluded due to their special accounting practices that make the estimation of discretionary (abnormal) accruals difficult, as explained in previous empirical studies (Peasnell et al., 1998, 2000a; Chtourou et al., 2001).
3. Mining firms are excluded due to empirical evidence supporting the view that investors recognise the value inherent in operating flexibility in the mining industry (Kelly, 2004). Thus, the market value of mining firms differs from other firms in that it includes other major factors, such value of any real operating options (Kelly, 2004; Dixit and Pindyck, 1994; Brennan and Schwartz, 1985).

Table 3-5: Sample size for the study period.

Description	1996/97	1997/98	1998/99	1999/2000	<i>Total Number of Firms</i>
Top 500 on ASX (according to Connect 4)	500	506	513	500	2019
Insufficient/missing data	(45)	(54)	(39)	(64)	(202)
Regulated & Mining Industries, and Financial Sector	(265)	(253)	(247)	(215)	(980)
Industries are too small	(13)	(9)	(9)	(14)	(45)
Outliers	(1)	(2)	(7)	(4)	(14)
Firms used in the full sample	176	188	211	203	778

OLS regression is used to estimated abnormal accruals; it is therefore necessary to only include industries with sufficient firm observations to ensure unbiased estimation. Following prior research (DeFond and Jiambalvo, 1994; Subramanyam, 1996), industry groups with less than six observations are dropped from the sample.

Due to the sensitivity of regressions to extreme outliers, firm observations were removed (see Table 3-5). The criteria used to identify outliers are adopted from Easton and Harris (1991).⁶¹

The reasons non-top 500 Australian public companies listed on the Australian Stock Exchange (ASX) were excluded are:

- 1) Information relating to the top 500 companies on ASX is more freely available and more standardised than non-top 500 companies on ASX.

⁶¹ If earnings level scaled by beginning price or change in earnings scaled by beginning price are above 1.5 or below -1.5, then it is considered to be an outlier.

- 2) Small firms do not implement corporate governance mechanisms to the same level as large firms. A survey from the Centre for Corporate Law and Securities Regulations (CCLSR) found that the extent and quality of corporate governance disclosure is typically greater for larger companies than smaller companies (Ramsay and Hoad, 1998). The CCLSR defines ‘small companies’ as companies not ranked in the top 500 companies on ASX. Carson (1996) found that larger companies were more likely to disclose information regarding corporate governance practices in their annual reports than smaller companies.

3.3.3 Data collection

Monthly share prices of the top 500 ASX listed companies during 1996-1999 are calculated from daily share prices (*source*: SIRCA database). Accounting data are hand-collected from 1996/1997, 1997/1998, 1998/1999, 1999/2000 annual reports for each firm (*source*: Connect 4 database). Corporate governance practices are also hand collected and quantified from the 1996/1997, 1997/1998, 1998/1999, 1999/2000 annual reports (*source*: Connect 4 database). The process involves an examination of financial statements to identify the required data from income and cash flow statements, balance sheet, and footnote disclosure items.

3.4 OPERATIONALISATION OF THE CONSTRUCTS

3.4.1 Information Content of Accounting Earnings

3.4.1.1 Development of the empirical model

One measure of the information content of earnings is its explanatory power for share returns. Tests relating to the information content of accounting earnings are conducted in two steps. The first step is to examine the relation between earnings and returns irrespective of indicators of earnings reliability. The model shown below assumes that both earnings level and earnings change help explain changes in share prices.

Equation 7: The Easton and Harris (1991) model

$$AR_j = \beta_0 + \beta_1 E_j + \beta_2 \Delta E_j + \xi_j$$

AR_j is the annual return accumulated for firm j for nine months prior to through three months after fiscal year-end.

E_j is earnings per share.

ΔE_j is change in earnings per share.

Unlike all prior studies in the corporate governance and earnings management literature, the information content of accounting is tested by using earnings level and change in earnings as proxies for unexpected earnings. The approach is motivated by the following reasons:

- Brown et al. (1987) demonstrates that multiple proxies for unexpected earnings is likely to reduce measurement error bias in regression estimates of the coefficients relating to unexpected earnings and unexpected returns.
- Easton and Harris (1991) provide evidence both variables (earnings level and change in earnings) complement each other and do not substitute each other.
- Residual income valuation models (e.g. Ohlson model) express firm value as the sum of the book value of equity and the present value of future abnormal earnings

(Ota, 2001). If share prices are a linear function of only book value of equity and expected abnormal earnings, then share returns are a linear function of level of earnings and change of earnings.⁶²

Previous practices are followed in measuring variables in Equation 7. The annual return is estimated as the annual returns accumulated over the 12 months extending from nine months prior to through three months after each firm's respective fiscal year-end (e.g. Easton and Harris, 1991; Ali, 1994; Cheng et al., 1996).

The normal practice is also to scale variables by the beginning price (Christie, 1987). The practice was initiated to cope with heteroscedasticity (*see* White, 1980). Accordingly, earnings and change in earnings (in Equation 7) are deflated by beginning of year market price in the model.

The second step of the analysis is to test the information content of earnings conditional on the reliability of earnings. The slope of earnings response coefficient is a measure of the information content of earnings (e.g. Ali, 1994; Cho and Jung, 1991; Collins and Kothari, 1989). The primary proposition of the research is that corporate governance and earnings management, as indicators of earnings reliability, should affect the slope of the earnings response coefficient through their impact on shareholders' perception of earnings.

The Wald test (*see* Greene 2000) is used as one of the tests to find out whether the earnings response coefficient after conditioning on earnings reliability are significantly different from the earnings response coefficient before introducing the indicators of

⁶² Deng and Lev (1998) recognise that the share prices (price model) may suffer from size-related problems (scale effect) and may not be well specified. Scale effects are generally understood to arise from the fact that large (small) firms will have large (small) market capitalization, large (small) book value, and large (small) earnings. In contrast, share returns (returns model) do not suffer such problems (scale-free) because the variables used in the model are deflated by the lagged market value of equity and therefore scale-free (Easton, 1999; Easton and Sommers, 2003).

earnings reliability.⁶³ Three major tests are conducted using the slope of the earnings response coefficient. They are:

1. Testing the impact of earnings management (as an indicator of earnings reliability) on the information content of accounting earnings;
2. Testing the impact of corporate governance attributes (as indicators of earnings reliability) on the information content of accounting earnings; and
3. Testing the impact of corporate governance attributes (as indicators of earnings reliability) on the information content of accounting earnings after conditioning on earnings management (as an indicator of managers' incentive to manage earnings).

3.4.1.2 Cross-sectional vs. Firm specific time-series

When testing the slope of the earnings response coefficient, a cross-sectional approach is used due to its general advantages, such as flexibility in the reoccurrence of observations over time. A cross-sectional approach is selected over a time-series approach due to the independence of corporate governance observations over time. Other factors also support the selection of a cross-sectional approach. They are:

1. While firm-specific time-series response coefficients are slightly higher than cross-sectional (Teets and Wasley, 1996), the magnitude of earnings response coefficient should not matter as much as providing evidence that earnings response coefficients for firms with effective corporate governance or low earnings management are higher than firms with ineffective corporate governance or high earnings management. The cross-sectional approach tends to address the existing research question.

⁶³ See section 3.5.3.4 for further information on the Wald test.

2. Studies (e.g. Collins and Kothari, 1989) supporting the view that earnings response coefficients vary over time emphasize the line of reasoning that a time-series approach cannot serve in measuring the impact of the independent observations. Given that corporate governance, earnings management, and earnings response coefficients vary over time, a cross-sectional approach should be selected.
3. Extreme levels of earnings management are not accounted for when estimating earnings response coefficient using a time-series model. The explanation is that using a time series eliminates extreme levels of earnings management by combining them with the reversal effect over time for each firm. A cross-sectional approach is more effective in accounting for extreme cases of earnings management by separating them from any reversal effects.

Following Collins and Kothari (1989), Ali (1994) and Cheng et al. (1996), the cross-sections will be pooled over time. A pooled cross-section over time would display an over time picture of the results without the disadvantages of a time series approach.

3.4.1.3 Controlling for cross-sectional determinants of earnings response coefficient

Cross-sectional regression ignores earnings response coefficient variation across firms and uses all observations to estimate a single response coefficient for each year. Other studies empirically show that earnings response coefficients vary across firms due to firm specific factors (e.g. Lipe, 1990; Collins and Kothari, 1989). Including such factors would reduce the bias in the cross-sectional coefficients caused by correlated omitted variables. These factors are described in the literature as ‘determinants of earnings response coefficient’ (Cho and Jung, 1991). Systematic risk and growth are major determinants of earnings response coefficient.

An inverse relationship exists between price reactions and firm risk (Lipe, 1990; Collins and Kothari, 1989). The higher the systematic risk the smaller the present value of a given increase in expected future earnings and cash flows caused by current unexpected earnings (Collins and Kothari, 1989).

Empirical studies use beta as a proxy for systematic risk (e.g. Vafeas 2000). Beta is a determinant of a firm's expected rate of return (Cho and Jung, 1991) and is measured through market model CAPM using the available time-series of monthly returns and market returns, as measured by the ASX All-Ordinaries index (Gul et al., 2002).

According to the standard share price growth model developed by (Cheng et al., 1999), growth is already incorporated in the constant variable of the cross-sectional returns-earnings relationship (see appendix E for further details). Hence, growth is not controlled for when testing the hypotheses in the current study.

3.4.2 Corporate Governance

Operationalisation of corporate governance attributes follows previous practice in the literature. Table 3-6 shows the operationalisation of explaining constructs.

Table 3-6: Operationalisation of explaining constructs

Corporate Governance attributes	Operationalisation
Ownership Concentration	Percentage of total shares held by the top 20 shareholders divided by the total number of shares.
CEO dominance	One if the chairman of the board is not an independent director. Otherwise, it equals zero.
Board Size	Number of directors on the board.
Board Independence	Number of independent directors divided by the total number of directors on the board.
Audit Committee Independence	Number of independent directors on the audit committee divided by the total number of directors on the audit committee.
Audit Committee Competence	Number of independent directors with financial expertise on the audit committee divided by the total number of directors on the audit committee.
Independent Directors' Ownership	Percentage of total shares held by independent directors divided by the total number of shares.
Managerial Ownership	Percentage of total shares held by executive directors divided by the total number of shares.
Debt Reliance	Total long-term borrowings divided by total assets.

The explaining constructs are operationalised as follows:

1. Ownership concentration

Following previous empirical research (e.g. Ramsay and Blair, 1993; Crough, 1980), the percentage of holdings by the top twenty shareholders is used to operationalise ownership concentration. Annual reports of listed companies in Australia are required to disclose the investment size of the top twenty shareholders.

2. CEO dominance

Following prior studies, CEO dominance is represented by a dummy variable. While prior studies measure CEO dominance as whether the CEO is the chairman (e.g. Gul and Leung, 2004; Dechow et al., 1996), the current study uses a broader measure of CEO dominance. A CEO is considered powerful if the chairman is not independent of

management. The measure is based on the notion that the chairman is less likely to hold the CEO accountable if the board chair is the CEO, a current executive of the firm, or a former executive of the firm within the past five years.

3. Board size

Following prior studies (e.g. Vafeas, 2000; Beasley, 1996), board size is measured as the total number of directors on the board. Annual reports of listed companies in Australia disclose information relating to board structure.

4. Board independence

The percentage of independent directors on the board is used to operationalise board independence.⁶⁴ Following regulatory recommendations, an independent director is defined as a director who has not been employed in any executive capacity by the company within the last five years. Annual reports of listed companies in Australia are not required to disclose information about the independence of non-executives. The current study uses other sources of information to help determine the independence of directors.

5. Audit committee independence

Audit committee independence is operationalised as the continuous variable representing percentage of independent directors sitting on the audit committee (e.g. Bryan et al., 2004). Director independence is measured similarly to the approach used in measuring board independence.

6. Audit committee competence

⁶⁴ Board independence is not measured using a dichotomous variable relating to whether outsiders have a majority on the board or not, because only 6% of the sample have below 50% outsiders. Thus, board independence will not be a variable after using the median to remove the confounding effect.

The percentage of independent directors with financial expertise sitting on the audit committee is a recently introduced measure of ‘Audit committee competence’. The measure is intended to merge independence and expertise. The third recommendation of the Blue Ribbon Committee (1999) is used as the basis for measuring the existence of financial expertise. The recommendation states that financial expertise is demonstrated by “past employment experience in finance or accounting, requisite professional certification in accounting, or any other comparable experience or background which results in the individual’s financial sophistication, including being or having been a CEO or other senior officer with financial oversight responsibilities”. Annual reports of listed companies in Australia are not required to disclose extensive information about directors’ expertise or any information about the independence of non-executives. Other sources of information are used to help determine such information if it is not disclosed through the annual reports.

7. Independent directors’ ownership

Following prior studies (e.g. Beasley, 1996), independent directors’ ownership is measured as the number of share owned by independent directors divided by the firm’s total issued ordinary shares. Director independence is measured similarly to the approach used in measuring board independence.

8. Managerial ownership

Following prior studies (e.g. Hutchinson and Gul, 2004; Gul et al., 2002), managerial ownership is measured as executive directors ownership divided by the firm’s total issued ordinary shares. Firms listed on the ASX are not required to disclose shareholding of all executives, but are required to report executive directors’ share ownership in the annual reports.

9. *Debt reliance*

Following prior studies (e.g. Gul and Tsui, 2001; Agrawal and Knoeber, 1996), debt reliance is represented by the level of leverage. Leverage is calculated as total long-term debt divided by total assets.

Each corporate governance attribute must be at a threshold level. It is possible that although each corporate governance attribute is high, shareholders may not perceive it to be sufficiently high and would perceive it to have a limited contribution. As a result, all operational variables (except for CEO dominance and audit committee independence) are partitioned by a dummy variable representing the cross-sectional median to overcome the confounding effect of perceived-limited-monitoring contributions.⁶⁵

Given that the task of corporate governance is to align managers' objectives with the interests of shareholders (Maher and Andersson, 2000), the impact of corporate governance is important only when managers are acting opportunistically. When managerial behaviour is consistent with the interests of shareholders, the monitoring contribution of corporate governance attributes becomes restricted.

3.4.3 *Earnings Management*

Earnings management is used in three separate tests.⁶⁶ The descriptions of these tests are as follows:

1. When testing the association between corporate governance and earnings management, earnings management is used to reflect managers' capacity to act

⁶⁵ While CEO dominance is already a dummy variable, the median of audit committee independence equals 100%.

⁶⁶ While opportunistic accrual management is often difficult to observe directly, analysis of patterns in accruals may reveal to investors that cash flow changes are moving in a different direction from accruals (Ayres, 1994).

- opportunistically. The empirical indicator of earnings management is used as a continuous variable in this test.
2. When testing the association between earnings management and earnings response coefficient, earnings management is used as an indicator for earnings reliability. Earnings management is represented by a continuous variable.
 3. When testing the association between corporate governance and earnings response coefficients, earnings management is used as a condition boundary to determine whether managers have an incentive to manage earnings. The empirical model is based on the proposal that managers in firms with low abnormal accruals have no incentive to manage earnings and managers in firms with high abnormal accruals have an incentive to manage earnings. The empirical indicator of earnings management is used as a dummy variable to partition sample firms and focus on firms with high earnings management in order to fully capture the impact of the existence of management's incentive to alter accounting earnings on the relation between corporate governance and the information content of earnings.

From a permanence of earnings perspective, earnings management should mean to shareholders that accounting earnings are less likely to reflect the natural effect of a firm's transactions and events. Kothari's (2001) argues that opportunistic earnings management are not permanent. Subramanyam (1996) provides evidence supporting Kothari's (2001) argument that opportunistic earnings are transitory. Subramanyam (1996) finds that share returns' response to non-discretionary earnings is higher than discretionary earnings.

To determine the level of earnings management in a firm, a measure of the proportion of earnings that are not managed is needed. Although managed earnings are

hard to measure, the level of managed earnings is determined by estimating the unmanaged proportion of earnings.

As accruals provide management with the opportunity to alter earnings, abnormal accruals are used as an empirical indicator of earnings management (Bowman and Navissi, 2003; Batov et al., 2001, Teoh et al., 1998a, 1998b; Dechow et al., 1995; DeFond and Jimbalvo, 1994; Boynton et al., 1992; Jones, 1991). Abnormal and normal accruals are used to measure managed and unmanaged earnings, respectively.

McNichols (2000) discusses three research designs commonly used in earnings management literature, which are shown in Table 3-7. McNichols (2000) argues that selecting a research design to measure earnings management depends on the question addressed by the research. Two of the three research designs focus on accruals management rather than earnings management, because of the following:

1. Cash earnings are less likely to be managed, because they are hard to manipulate.
2. Accounting accruals are the favoured instrument for earnings management (Schipper, 1989; Burilovich and Kattelus, 1997).

Table 3-7: Research designs from the earnings management literature.

Research design in the earnings management literature	Studies implementing the design
<i>Aggregate Accruals Models</i>	(e.g. Kothari et al., 2001; DuCharme, 2001; Erickson and Wang, 1999; DeFond and Subramanyam, 1998; Becker et al., 1998; Han and Wang, 1998 ; Dechow et al., 1995; Jones, 1991; DeAngelo, 1986; Healy, 1985)
<i>Specific Accrual Models</i>	(e.g. Beaver and McNichols, 1998; Beneish, 1997; Beaver and Engel, 1996; Petroni, 1992; McNichols and Wilson, 1988)
<i>Frequency Distribution Approach</i>	(e.g. Degeorge et al., 1999; Myers and Skinner, 1999; Burgstahler and Dichev, 1997)

In general, aggregate accruals models have significant advantages over specific accruals when the research seeks to understand the explanatory consequences of other variables. McNichols (2000) provides the following reasons to justify the selection of the aggregate accruals approach over specific accruals approach:

1. While the specific accrual models approach is not flexible in investigating additional variables, the aggregate accruals models approach allows the control for additional variables (i.e. corporate governance).
2. Using a specific accrual model may limit the generalisability of the findings, because the number of firms for which a specific accrual is managed may be small relative to the number of firms with aggregate accruals (Beneish, 2001).

3. If it is not clear which accrual management might be used to manage earnings, then the power of a specific accrual test for earnings management is reduced.⁶⁷
4. If a research aims to explore the association between earnings management and other hypothesised factors, then a specific accrual model is less tractable because it requires a separate model for each accrual likely to be influenced by the hypothesised factors.
5. Finally, the large number of studies published using aggregate accruals models indicates the wide acceptance of the aggregate accruals approach as a proper proxy for earnings management.

Aggregate accruals approach is selected over frequency distribution approach because of the following reasons:

1. Holland (2004) concludes that the assumption of symmetry used by the frequency distribution approach in Burgstahler and Dichev (1997) to test for the prevalence of earnings management can only be justified where there is a known symmetrical distribution for the data in question.
2. Durtschi and Easton (2004) state that there is no unequivocal evidence supporting the pervasive presumption that the discontinuities at zero in the frequency distribution approach are due earnings management. They provide evidence suggesting that the discontinuity is likely to reflect a tendency for analysts to avoid coverage of firms with small losses, rather than being an indication of earnings management.

⁶⁷ Prior studies do not specify any accruals item that is specifically associated with corporate governance attributes; and therefore does not promote the use of specific accrual models in corporate governance studies.

3. Frequency distribution approach measures discretion over earnings as the behaviour of earnings after they are managed. Measuring the behaviour of earnings after management does not help test the propositions presented in Chapter Two.
4. Frequency distribution approach does not differentiate between discretionary (abnormal) and non-discretionary (normal) accruals (McNichols, 2000). Not being able to differentiate between accruals does not satisfy the need to measure management's incentives to manage earnings, as discussed in Chapter Two.
5. Frequency distribution approach provides results specifying which group of firms will manage earnings rather than forming a better measure of discretionary (abnormal) accruals (McNichols, 2000). The propositions presented in the previous chapter require the measuring of discretionary (abnormal) accruals.

The aggregate accruals approach is selected due to three factors. First, it captures the net effect of all accounting estimations and choices that influence reported earnings. This factor is needed because the corporate governance literature does not specify certain accounting manipulations to be meaningfully related to corporate governance. Second, examining the behaviour of total discretionary accruals fulfils the need to measure whether managers had an incentive to manage earnings. Managers only manage earnings when they have an incentive to do so (e.g. Dechow et al., 2000; Degeorge et al., 1999). Finally, the aggregate accruals approach has been the primary focus of earnings management studies measuring opportunistic earnings management (McNichols, 2000).

3.4.3.1 Aggregate Accruals Models

Healy (1985) argues that accruals modify the timing of accounting earnings and are composed of discretionary accruals (abnormal accruals) and non-discretionary accruals (normal accruals). Prior research documented that firms use discretionary accruals to practice earnings management (eg. Kasznik, 1999; Hall and Stammerjohan, 1997; Robinson and Grant, 1997; Dechow et al., 1995; Gaver et al., 1995; Holthausen et al., 1995; Warfield et al., 1995; DeFond and Jiambalvo, 1994; Perry and Williams, 1994; Sweeny, 1994; Cahan, 1992; Jones, 1991; Healy, 1985).

While non-discretionary accruals represents accruals mandated by accounting standard setting bodies and are beyond the control of management, discretionary (abnormal) accruals enable managers to transfer earnings between periods and are proxies for earnings management (Healy, 1985; Teoh et al., 1998a, 1998b). The most commonly used discretionary accruals models by academic researchers in the area of earnings management are the Jones (1991) and the modified Jones (Dechow et al., 1995) models (eg. Kothari et al., 2001; Bartov et al., 2000; Thomas and Zhang, 2000; Kasznik, 1999; Becker et al., 1998; Beneish, 1997; Guay et al., 1996; Subramanyam, 1996; Dechow et al., 1995; DeFond and Jiambalvo, 1994). Table 3-8 summaries the description and the limitation for each of the two models.

Table 3-8: Abnormal accruals models

Model	Description	Limitations
Jones (1991)	Expresses accruals as a function of the changes in sales revenue and the level of gross total property, plant, and equipment.	Has the potential to measure abnormal accruals poorly when managers exercise discretion over revenue, because it assumes that revenues are unmanaged. It also may provide bias accruals, because it omits expenses.
Modified Jones model (Dechow et al., 1995)	Modifies the Jones (1991) model to better control for the possibility of revenue manipulation. It attempts to mitigate potential bias from assuming manipulation-free revenues.	May misestimate accruals, because it assumes that all changes in credit sales are the result of an earnings management activity. It also may provide bias accruals, because it omits expenses.

Several researches argue that only the Jones and the modified Jones models appear to have the potential to provide reliable estimates of discretionary accruals (Kothari, 2001; Guay et al., 1996; Subramanyam, 1996; Dechow et al., 1995).⁶⁸ A brief explanation of the assumption each model is based on is followed (see Table 3-8 for descriptions and limitations):

1. Jones (1991) model:

Jones (1991) is motivated to capture a larger portion of managers' manipulations rather than selecting a single accrual account as suggested by McNichols and Wilson (1988). Jones (1991) argues that accruals are influenced by economic circumstances.

⁶⁸ A form of discretionary accruals models (Kothari et al., 2001) is based on the view that discretionary accrual estimates are influenced by firm performance. If discretionary accrual estimates are correlated with firm performance (Dechow et al. 1995; Kasznik 1999; Kothari et al. 2002), then measures of discretionary accruals should control for firm performance in the estimation of discretionary accruals. Such a measure is based on partitioning firms within each industry to deciles and then using the median return on assets of each portfolio to control performance. This requires a large number of firms per each industry, such as samples obtained from large capital markets (i.e. US markets). Given the size of firm observations in each industry in the sample, such an approach is not feasible to apply to samples derived from smaller markets (i.e. Australian markets).

Jones (1991) attempts to control for the effect of changing economic circumstances on accounting accruals by controlling changes in non-discretionary accruals. While sales growth controls a firm's non-discretionary working capital, the level of property, plant, and equipment controls the firm's non-discretionary depreciation expense (Bernard and Skinner, 1996). Jones (1991) uses the abnormal portion of total accruals to capture earnings management.

2. Modified Jones model (Dechow et al., 1995)

Dechow et al. (1995) explain that a weakness of the Jones (1991) model lies in its inability to capture the impact of sales-based manipulations, because Jones (1991) assumes changes in sales are associated with non-discretionary accruals. Dechow et al. (1995) proposes a modification that would help detect sales-based earnings management. While Jones (1991) implicitly assumes that revenues are non-discretionary, Dechow et al. (1995) assumes that only collected revenues are non-discretionary. Dechow et al. (1995) modifies the Jones model by eliminating errors caused when discretion is exercised over revenue through credit sales.

The original models of Jones (1991) and Dechow et al. (1995) are time series. However, recent studies (eg. DeFond and Jiambalvo, 1994; Subramanyam, 1996; DeFond and Subramanyam, 1998; Becker et al., 1998; Peasnell et al., 1998; Teoh et al., 1998a, 1998b) prefer cross-sectional discretionary accruals models to time-series models due to the following reasons:

1. Time series Jones model assumes that coefficient estimates on change in sales and the level of property, plant and equipment remain stationary over time, which is not appropriate (Peasnell et al., 2000b).

2. Using cross-sectional accruals models help to avoid the survivorship bias problems inherent in the time-series approach (Peasnell et al., 2000a).
3. Under time-series models, the self-reversing property of accruals may introduce specification problems in the form of serially correlated residuals (Peasnell et al., 2000b).
4. Subramanyam (1996) and Bartov et al. (2000) use Jones (1991) and modified Jones (Dechow et al., 1995) models to evaluate whether cross-sectional models are similar to time series models in providing reliable estimates of discretionary accruals. Subramanyam (1996) and Bartov et al. (2000) find that the cross-sectional Jones and the cross-sectional modified Jones models perform better than their time-series counterparts in detecting earnings management.
5. Subramanyam (1996) and Peasnell et al. (1998) state that cross-sectional models generate larger samples and provide more observations per model when estimating coefficients than time-series models.
6. Peasnell et al. (1998) state that cross-sectional models allow the inclusion of firms with short histories.

The above reasoning justifies the selection of the cross-sectional version over the time-series version.

3.4.3.2 Cross-sectional Models

The cross-sectional approach adjusts for changing industry wide economic conditions, which influences accruals independently of earnings management (Teoh et al., 1998a, 1998b). However, it is based on the assumption that all firms in the industry have similar operating cycle.

Recent studies measure abnormal (discretionary) accruals using cross-sectional models (eg. DeFond and Jiambalvo, 1994; Subramanyam, 1996; DeFond and Subramanyam, 1997; Becker et al., 1998; Teoh et al., 1998a, 1998b; Kasznik, 1999; Bartov et al., 2000; Chtourou et al., 2001; Kothari et al., 2001). Details of the cross-sectional Jones (1991) and modified Jones (Dechow et al., 1995) models are followed.

1. *Cross-sectional Jones model*

Abnormal accruals are measured in two steps. Firstly, the Jones model measures non-discretionary accruals as a function of the level of property, plant, and equipment, and changes in revenue. All variables in the accruals expectations model are scaled by lagged assets to reduce heteroscedasticity (Jones, 1991). Equation 8 estimates coefficients separately for each industry group.

Equation 8: Cross-sectional Jones (1991) non-discretionary accruals model

$$TA_{j,g}/A_{j,g} = \alpha_0 (1/A_{j,g}) + \alpha_1 (\Delta REV_{j,g}/A_{j,g}) + \alpha_2 (PPE_{j,g}/A_{j,g})$$

where

TA	=	Total accruals
A	=	Beginning of year total assets
ΔREV	=	Change in net revenue
PPE	=	Property, plant, and equipment
j	=	denote firm from g industry group
g	=	denote industry group

Secondly, in Equation 9 abnormal accruals for each sample firm j is defined as the residual from Equation 8.

Equation 9: Cross-sectional Jones (1991) discretionary accruals model

$$AA_j = TA_j/A_j - [\hat{\alpha}_0 (1/A_j) + \hat{\alpha}_1 (\Delta REV_j/A_j) + \hat{\alpha}_2 (PPE_j/A_j)]$$

where

AA_j = Abnormal accruals as measured by the difference between total accruals and predicted total accruals.

$\hat{\alpha}_0$, $\hat{\alpha}_1$, and $\hat{\alpha}_2$ are the fitted coefficients from Equation (8).

Estimated abnormal accruals are calculated as the error term from Equation 8.

2. Cross-sectional Modified Jones model:

As can be seen from Equations 10 and 11, the modified Jones model proposes modifying the change in revenue by adjusting for change in accounts receivable (ΔREC).

Equation 10: Dechow et al. (1995) modification of the cross-sectional Jones non-discretionary accruals model

$$TA_{j,g}/A_{j,g} = \gamma_0 (1/A_{j,g}) + \gamma_1 ((\Delta REV_{j,g} - \Delta REC_{j,g})/A_{j,g}) + \gamma_2 (PPE_{j,g}/A_{j,g})$$

where ΔREC is the change in accounts receivables.

Equation 11: Dechow et al. (1995) modification of the cross-sectional Jones discretionary accruals model

$$AA_j = TA_j/A_j - [\hat{\gamma}_0 (1/A_j) + \hat{\gamma}_1 ((\Delta REV_j - \Delta REC_j)/A_j) + \hat{\gamma}_2 (PPE_j/A_j)]$$

where $\hat{\gamma}_0$, $\hat{\gamma}_1$, and $\hat{\gamma}_2$ are the fitted coefficients from equation (8).

In Equation 11, the coefficients from Equation 10 are used to predict expected total accruals. Expected total accruals are deducted from actual total accruals ($TA_{j,g}/A_{j,g}$) to obtain abnormal accruals (AA_j). The effectiveness of the model in measuring earnings management depends on how well discretionary accruals are separated from non-discretionary accruals. Dechow et al. (1995) conclude that their version of the modified

Jones model is superior over all other currently available models, though it remains imperfect. Subramanyam (1996) finds that results obtained from cross-sectional modified Jones model (Dechow et al., 1995) are qualitatively similar to the results obtained from cross-sectional Jones model. However, estimations cannot be very precise.

Subramanyam (1996) states that cross-sectional models are not free of measurement problems, similar to all other discretionary accruals models. It can be argued that the Jones (1991) and the modified Jones (Dechow et al., 1995) models misclassify discretionary and non-discretionary accruals. However, Bernard and Skinner (1996) state that the misclassification problem is common to all earnings management studies.⁶⁹

The current study focuses on the modified Jones (Dechow et al., 1995) model as the key measure for earnings management for two reasons. First, the results obtained from cross-sectional modified Jones model are qualitatively similar to the results obtained from cross-sectional Jones model (Subramanyam, 1996). Second, the modified Jones (Dechow et al., 1995) model eliminates errors caused when discretion is exercised over revenue through credit sales.

3.4.3.3 Measuring Total Accruals

To be able to estimate discretionary accruals, total accruals need to be computed. There are two methods for computing total accruals. The first method is the traditional balance sheet approach that has been used in the majority of prior studies (eg. Healy, 1985; Jones, 1991; Dechow et al., 1995; Peasnell et al., 1998; Kothari, 2001). The second method is the cash flow approach, which is being adopted by recent studies (e.g.

⁶⁹ The data results show that there is no significant difference between the Jones (1991) model and the modified Jones (Dechow et al., 1995) model.

Subramanyam, 1996; DeFond and Subramanyam, 1997; Becker et al., 1998; Klein, 2002b).

Under the traditional balance sheet approach, total accruals are measured as follows:

Equation 12: Balance sheet approach.

$TA_t = \Delta CA_t - \Delta Cash_t - \Delta CL_t + \Delta DCL_t - DEP_t$	
ΔCA_t	Change in current assets in year t
$\Delta Cash_t$	Change in cash and cash equivalents in year t
ΔCL_t	Change in current liabilities in year t
ΔDCL_t	Change in debt included in current liabilities in year t.
DEP_t	Depreciation and amortization expense in year t

Under the cash flow approach, total accruals are measured as follows:

Equation 13: Cash flow approach.

$TA_t = EBXA_t - OC_t$	
$EBXA_t$	Earnings before extraordinary and abnormal items in year t
OC_t	Operating cash flow in year t

However, most recent studies prefer the cash flow approach to the traditional balance sheet approach due to the following reasons:

1. While the balance sheet approach omits non-current accruals (except for depreciation and amortisation), the cash flow approach accounts for both current and non-current accruals. Omitted non-current accruals can take the form of overstated provisions for restructuring costs, loan losses or warranty costs. Such unrealistic assumptions of estimated liabilities remove accruals from current earnings to future earnings and are not captured by the balance sheet approach.
2. Collins and Hribar (2002) find empirical evidence that the balance sheet approach becomes less efficient than the cash flow approach when firms experience mergers or acquisitions. The reason is that under the balance sheet approach an articulation is presumed between changes in balance sheet working capital

accounts and accrued revenues and expenses on the income statement. The articulation breaks down when non-operating events or activities are introduced (i.e. mergers or acquisitions).

3. Collins and Hribar (2002) find empirical evidence that the balance sheet approach is biased in measuring accruals for firms experiencing discontinuing operations (abnormal items). This is also due to the break down in the presumed articulation in the balance sheet approach.

Collins and Hribar (2002) demonstrate that the frequency and magnitude of errors introduced when using the balance sheet approach can be substantial. Based on the reasoning above, the cash flow approach will be employed to calculate total accruals.⁷⁰

As a result, the measure of total accruals is based on the cash flow approach, which is used to divide accruals into discretionary and non-discretionary accruals based on the cross-sectional modified Jones models. The level of discretionary accruals is then used to as an empirical indicator of earnings management.

3.5 ANALYSIS PROCEDURES AND HYPOTHESES

The analysis of the data proceeds in four distinct steps. Each of these steps and the associated hypothesis to be tested are outlined in the sections below.

3.5.1 Step one: Data Collection and Descriptive Statistics

The first stage of analysis is to collect the data from share markets and annual reports of the selected firms and insert them into a computer spreadsheet. Descriptive statistics are computed to profile the data. A comparison is made between firms that

⁷⁰ Data results support Collins and Hribar's (2002) findings that the cash flow approach is less bias than the balance sheet approach.

deemed to have engaged in earnings management and firms that deemed to not have engaged in earnings management.

3.5.2 Step two: Computing Abnormal Accruals

The second step of analysis is to compute abnormal accruals. The study uses the modified Jones (Dechow et al., 1995) model to compute abnormal accruals. Abnormal accruals are calculated as the error term of the accruals expectation model (see section 3.4.3 for details).

Only the magnitude of abnormal accruals is used rather than the level of abnormal accruals. This is due to earnings management being the deviation of accounting earnings from reflecting the natural effect of the firm's transactions and events. Hence, earnings management is not conditioned by the direction (upwards or downwards) of the change in accounting earnings, but by the change itself.⁷¹

3.5.3 Step three: Regression Analysis (Univariate and Multivariate Analysis)

Three methods are used to test the hypotheses. They are pooled GLS (random effect) regression, mean coefficients, and Wald test.

3.5.3.1 Pooled GLS regression

The pooled GLS regression over the four-year test period is used rather than the pooled OLS. The use of pooled OLS would be optimal if the residuals were cross-sectionally uncorrelated, and if they were homoscedastic across firms (Baltagi, 2001).

⁷¹ It can be argued that downward abnormal accruals are indicative of conservatism, and therefore, should be analysed separately from upward abnormal accruals. However, downward abnormal accruals could be driven by other factors. For example, Butler et al. (2004) finds evidence that firms in severe financial distress engage in liquidity-enhancing transactions (e.g., delaying payables or factoring receivables) that result in large downward abnormal accruals. Downward abnormal accruals can also result from reversal of previous short-term upward abnormal accruals or from a strategic approach such as a "big bath" effect in which downward abnormal accruals are adopted in one period to increase future reported earnings.

While the OLS estimates coefficients are still unbiased and consistent under the violation of normality and constant variance, the estimates are inefficient (Greene, 2000). The estimated standard errors are biased and inconsistent, thus the results test statistics are also biased and inconsistent (e.g. Baltagi, 2001; Greene, 2000).

Under these circumstances, GLS is the proper estimation method. GLS estimation effectively standardises the observations (e.g. Baltagi, 2001; Greene, 2000).

Given that coefficients may be constant over time, estimating using pooled regression becomes more efficient. Also pooled estimation is a simple way to examine the sensitivity of the results to alternative specifications (Beaver, 1998).

3.5.3.2 Random effect versus Fixed effect

A pooled cross-sectional GLS (random effects) model is used to test the proposed relationships. The fundamental advantage of a pooled regression over a cross section is that it allows the researcher far greater flexibility in modelling differences in sample specific behaviour (Greene, 2000). The assumptions underlying the pooled least square imply that no relationships exist within or between each cross-section. Thus, if any relationship does exist and is not specified in the model, then the misspecification is captured in the error term and may contaminate the coefficient estimates.

There are two basic frameworks used to account for relationships within or between each cross-section (e.g. Baltagi, 2001; Greene, 2000). The least squares dummy variable (fixed effect) approach assumes that individual constant is a group specific constant term in the regression model (Greene, 2000). The generalised least squares (random effect) approach specifies that individual constant is a group specific disturbance similar to the error term, except for each group (Greene, 2000). There is a trade-off between the consistency of the least squares dummy variable (fixed effect) approach and the

efficiency of the generalised least squares (random effect) approach. Mundalk (1978) argue that the generalised least squares (random effect) approach assumes exogeneity of all the regressors and the random individual effects. In contrast, the least squares dummy variable (fixed effect) allows for endogeneity of all the regressors and the individual effects. Most applications in economics have made the choice between both approaches based upon the standard Hausman (1978) test. However, when dealing with unbalanced panels, as the case in this study, the Hausman test becomes problematic (Greene, 2000).

The random effect model is chosen as a better approach due to the following reasons:

1. The fixed effect model may be viewed as applying only to the cross-sectional firms in the study, and cannot be generalised outside the sample (Greene, 2000). Thus, it is not possible to confirm that the differences between firms can be described as parametric shifts of the regression function.
2. Given that the sampled cross-sectional firms were drawn from a large population (i.e. ASX list companies), it is more appropriate to view individual specific constant terms as randomly distributed across cross-sectional firms (Greene, 2000).
3. Using dummy variables to identify firms would result in a large number of parameters relative to the number of observations. Thus, fixed effect is costly in terms of degrees of freedom lost.
4. Given that some empirical indicators of corporate governance do not vary much over time, the pooled fixed effect regression is not a correct method in this case. The estimations of pooled random effects regressions assist in controlling for the

underlying time-invariant corporate governance characteristics and policies of each firm.

5. Although unbalanced random-effects models may lead to groupwise heteroscedasticity problems, White's Heteroscedasticity Consistent Covariance estimator is used to correct for heteroscedasticity.

Nevertheless, it should be noted that one of the limitations of the random effect approach is that it may suffer from the inconsistency due to omitted variables. Given that the study uses multiple proxies for unexpected earnings and multiple empirical indicators for corporate governance, the impact of the limitation is likely to be minimal.

3.5.3.3 Mean Coefficients

The mean estimates across results for each of the four individual years are used. As pointed out by Bernard (1987), because of industry effects, the standard error in the t-statistics denominator may be biased downward due to an overstatement of the true but unknown number of independent observations in the regression.

To address this concern, a test of the mean coefficients is computed across the four individual years as follows. First, each year's regression parameter estimates is treated as a single observation. The cross-time means of these parameters estimates (for each independent year variable) are then divided by their standard errors.

Second, the resulting amounts are then compared to the t-statistic with three degrees of freedom to assess their statistical significance. Thus, the mean estimates are mainly used to confirm that the potential cross-sectional correlations in the error term have no effect on the annual coefficients.

3.5.3.4 Wald Test

A comparison is conducted between the coefficients of two models using the Wald test.

Wald test is used to determine whether coefficients in both models are significantly different from each other. The following equation is used (Greene, 2000):

$$Wald = \frac{(Coefficient_2 - Coefficient_1)^2}{(SE_2)^2 + (SE_1)^2} > \chi^2(df = 1)$$

3.5.4 Step four: Robustness Checks

The fourth step of analysis is to test regression assumptions and check for outliers and collinearity. For example, regression assumptions are tested by examining the residuals of the model (Pedhazur, 1997). The assumptions are: normality, linearity, homoscedasticity, and independence of residuals (Pedhazur, 1997). Alternative methods will be used to overcome any violation of the assumptions, such as variance stabilising transformations and the use of weighted least squares regression.

Distributions with infinite variance tend to have thick tails, implying outliers. Relatively heavy weights can be placed on outliers (Judge et al., 1988). Thus, their presence tends to lead to bias and extremely sensitive least square estimates. Following prior studies (e.g. Easton and Harris, 1991), if earnings level scaled by beginning price or change in earnings scaled by beginning price are above 1.5 or below -1.5, then it is considered to be an outlier. This approach is proposed by Malinvaud (1980) to transfer infinite variance into finite variance by assuming that the distribution of the disturbances is bounded.

Corporate governance attributes could be considered interrelated (collinearity problem). If collinearity (or Multicollinearity) is found to be harmful, several methods will be adopted to reduce the severity of the collinearity problem.⁷² These methods are:

1. To transform variables included in the model to minimise seriousness of the problem (Gujarati, 1999).
2. To use the ridge regression estimator as proposed by Hoeral and Kennard (1970a, 1970b).
3. To choose a different operational variable representing the interrelated attributes to avoid potential endogeneity problems.

3.6 SUMMARY OF CHAPTER

Chapter Three discussed the sample selection, data collection procedures, and analysis procedures. The chapter discussed the method used to test the propositions, as presented in Chapter Two. The chapter presents the hypotheses that present empirically the propositions stated in Chapter Two. Tables 3-9 and 3-10 provide a summary of hypotheses and definition of variables.

⁷² Simultaneous equations is a method used in the corporate governance literature to detect collinearity (e.g. Agrawal and Knoeber, 1996). However, it will not be the only method used to detect collinearity, because the estimation of simultaneous linear equation systems needs a theory to restrict the coefficients before the estimation starts. Given that there is no theory on how the three attributes interact, the coefficients in the system cannot be reliably restricted using simultaneous equations.

Table 3-9: Summary of Hypotheses

Hypothesis One: The coefficients of regressing the magnitude of abnormal accruals on the empirical indicators of corporate governance are statistically different from zero.	H1₀: $\gamma_1 \geq 0, \gamma_2 \leq 0, \gamma_3 \geq 0, \gamma_4 \geq 0, \gamma_5 \geq 0, \gamma_6 \geq 0, \gamma_7 \geq 0, \gamma_8 \geq 0, \gamma_9 \geq 0$ H1₁: $\gamma_1 < 0, \gamma_2 > 0, \gamma_3 < 0, \gamma_4 < 0, \gamma_5 < 0, \gamma_6 < 0, \gamma_7 < 0, \gamma_8 < 0, \gamma_9 < 0$	Equation 3
Hypothesis Two: The interaction between the magnitude of abnormal accruals and earnings is less than the coefficient for earnings in the absence of abnormal accruals.	H2₀: $(\alpha_0 + \alpha_1) \geq \beta_1, (\psi_0 + \psi_1) \geq \beta_2$ H2₁: $(\alpha_0 + \alpha_1) < \beta_1, (\psi_0 + \psi_1) < \beta_2$	Equation 4
Hypothesis Three: The interactions between earnings and the empirical indicators of corporate governance are different from zero and from the coefficient for earnings in the absence of corporate governance.	H3₀: $(\varphi_0 + \varphi_1) \leq \beta_1, (\varphi_0 + \varphi_2) \geq \beta_1, (\varphi_0 + \varphi_3) \leq \beta_1, (\varphi_0 + \varphi_4) \leq \beta_1, (\varphi_0 + \varphi_5) \leq \beta_1, (\varphi_0 + \varphi_6) \leq \beta_1, (\varphi_0 + \varphi_7) \leq \beta_1, (\varphi_0 + \varphi_8) \leq \beta_1, (\varphi_0 + \varphi_9) \leq \beta_1, (\lambda_0 + \lambda_1) \leq \beta_2, (\lambda_0 + \lambda_2) \geq \beta_2, (\lambda_0 + \lambda_3) \leq \beta_2, (\lambda_0 + \lambda_4) \leq \beta_2, (\lambda_0 + \lambda_5) \leq \beta_2, (\lambda_0 + \lambda_6) \leq \beta_2, (\lambda_0 + \lambda_7) \leq \beta_2, (\lambda_0 + \lambda_8) \leq \beta_2, (\lambda_0 + \lambda_9) \leq \beta_2$ H3₁: $(\varphi_0 + \varphi_1) > \beta_1, (\varphi_0 + \varphi_2) < \beta_1, (\varphi_0 + \varphi_3) > \beta_1, (\varphi_0 + \varphi_4) > \beta_1, (\varphi_0 + \varphi_5) > \beta_1, (\varphi_0 + \varphi_6) > \beta_1, (\varphi_0 + \varphi_7) > \beta_1, (\varphi_0 + \varphi_8) > \beta_1, (\varphi_0 + \varphi_9) > \beta_1, (\lambda_0 + \lambda_1) > \beta_2, (\lambda_0 + \lambda_2) < \beta_2, (\lambda_0 + \lambda_3) > \beta_2, (\lambda_0 + \lambda_4) > \beta_2, (\lambda_0 + \lambda_5) > \beta_2, (\lambda_0 + \lambda_6) > \beta_2, (\lambda_0 + \lambda_7) > \beta_2, (\lambda_0 + \lambda_8) > \beta_2, (\lambda_0 + \lambda_9) > \beta_2$	Equation 5
Hypothesis Four: The coefficients for the interaction between earnings and the empirical indicators of corporate governance conditioned on the magnitude of abnormal accruals are different from zero and from the earnings response coefficient in the absence of abnormal accruals and/or corporate governance.	H4₀: $(\varphi_0 + \varphi_1) \leq \beta_1, (\varphi_0 + \varphi_2) \geq \beta_1, (\varphi_0 + \varphi_3) \leq \beta_1, (\varphi_0 + \varphi_4) \leq \beta_1, (\varphi_0 + \varphi_5) \leq \beta_1, (\varphi_0 + \varphi_6) \leq \beta_1, (\varphi_0 + \varphi_7) \leq \beta_1, (\varphi_0 + \varphi_8) \leq \beta_1, (\varphi_0 + \varphi_9) \leq \beta_1, (\lambda_0 + \lambda_1) \leq \beta_2, (\lambda_0 + \lambda_2) \geq \beta_2, (\lambda_0 + \lambda_3) \leq \beta_2, (\lambda_0 + \lambda_4) \leq \beta_2, (\lambda_0 + \lambda_5) \leq \beta_2, (\lambda_0 + \lambda_6) \leq \beta_2, (\lambda_0 + \lambda_7) \leq \beta_2, (\lambda_0 + \lambda_8) \leq \beta_2, (\lambda_0 + \lambda_9) \leq \beta_2$ H4₁: $(\varphi_0 + \varphi_1) > \beta_1, (\varphi_0 + \varphi_2) < \beta_1, (\varphi_0 + \varphi_3) > \beta_1, (\varphi_0 + \varphi_4) > \beta_1, (\varphi_0 + \varphi_5) > \beta_1, (\varphi_0 + \varphi_6) > \beta_1, (\varphi_0 + \varphi_7) > \beta_1, (\varphi_0 + \varphi_8) > \beta_1, (\varphi_0 + \varphi_9) > \beta_1, (\lambda_0 + \lambda_1) > \beta_2, (\lambda_0 + \lambda_2) < \beta_2, (\lambda_0 + \lambda_3) > \beta_2, (\lambda_0 + \lambda_4) > \beta_2, (\lambda_0 + \lambda_5) > \beta_2, (\lambda_0 + \lambda_6) > \beta_2, (\lambda_0 + \lambda_7) > \beta_2, (\lambda_0 + \lambda_8) > \beta_2, (\lambda_0 + \lambda_9) > \beta_2$	Equation 6

Table 3-10: Definition of variables

SYMBOL	VARIABLE	DEFINITION
AR_{jt}	Share Return	Annual return accumulated for firm j for nine months prior to through three months after fiscal year-end.
E_{jt}	Earnings Level	Earnings per share scaled by beginning price, before extraordinary items.
ΔE_{jt}	Earnings Change	Change in earnings per share and then scaled by beginning of period price for firm j.
$OWNCON_{jt}$	Ownership Concentration	Percentage of total shares held by the top 20 shareholders divided by the total number of shares.
$OWNMAN_{jt}$	Managerial Ownership	Percentage of total shares held by executive directors divided by the total number of shares.
$OWNOUT_{jt}$	Independent Directors' Ownership	Percentage of total shares held by independent directors divided by the total number of shares.
$DEBTRL_{jt}$	Debt Reliance	Total long-term borrowings divided by total assets.
CEO_{jt}	CEO dominance	One if the chairman of the board is not an independent director. Otherwise, it equals zero.
$BRDSZE_{jt}$	Board Size	Number of directors on the board.
$BRDIND_{jt}$	Board Independence	Number of independent directors divided by the total number of directors on the board.
$AUDIND_{jt}$	Audit Committee Independence	Number of independent directors on the audit committee divided by the total number of directors on the audit committee.
$AUDCMP_{jt}$	Audit Committee Competence	Number of independent directors with financial expertise on the audit committee divided by the total number of directors on the audit committee.
AAA_{jt}	Absolute Value of Abnormal Accruals	Absolute value of the residual from the Modified Jones model.
D_{0j}	Dummy for absolute value of abnormal accruals	One if magnitude of abnormal accruals as measured by the modified Jones (Dechow et al., 1995) model is above its yearly cross-sectional median. Otherwise, D_{0j} equals zero.
D_{1j}	Dummy variable for Ownership Concentration	One if $OWNCON_j$ is greater than its yearly cross-sectional median. Otherwise, D_{1j} equals zero.
D_{2j}	Dummy variable for Board Size	One if $BRDSZE_j$ is greater than its yearly cross-sectional median. Otherwise, D_{2j} equals zero.
D_{3j}	Dummy variable for Board Independence	One if $BRDIND_j$ is greater than its yearly cross-sectional median. Otherwise, D_{3j} equals zero.
D_{4j}	Dummy variable for Audit Committee Competence	One if $AUDCMP_j$ is greater than its yearly cross-sectional median. Otherwise, D_{4j} equals zero.
D_{5j}	Dummy variable for Independent Directors' Ownership	One if $OWNOUT_j$ is greater than its yearly cross-sectional median. Otherwise, D_{5j} equals zero.
D_{6j}	Dummy variable for Managerial Ownership	One if $OWNMAN_j$ is greater than its yearly cross-sectional median. Otherwise, D_{6j} equals zero.
D_{7j}	Dummy variable for Debt Reliance	One if $DEBTRL_j$ is greater than its yearly cross-sectional median. Otherwise, D_{7j} equals zero.

CHAPTER FOUR: ANALYSIS AND HYPOTHESIS TESTS

4.1 INTRODUCTION

Chapter Four presents the results of the data analysis from the research method described in Chapter Three. Based on the analysis, hypotheses one to four are tested and a series of conclusions are drawn. These hypotheses test the impact of corporate governance attributes (hypotheses One, Three, and Four) and the effect of abnormal accruals (hypothesis Two). When testing the hypotheses relating to corporate governance attributes, the analysis proceeds in three stages. First, the relationship between the magnitude of abnormal accruals and corporate governance variables is tested. To undertake stage one, the magnitude of abnormal accruals is determined using the modified Jones (Dechow et al., 1995) model.

The second stage assesses the relationship between corporate governance variables and the earnings response coefficients. This tests Hypothesis Three. In this stage, share returns are based on annual returns accumulated over the 12 months extending from nine months prior to through three months after each firm's respective fiscal year-end (e.g. Easton and Harris, 1991; Ali, 1994; Cheng et al., 1996).

The third stage of the analysis examines the impact of corporate governance variables on the earnings response coefficients after conditioning on the magnitude of abnormal accruals. This is a test of Hypothesis Four.

When testing Hypothesis Two, the relationship between the magnitude of abnormal accruals and the earnings response coefficients is examined. This link is based on using the magnitude of abnormal accruals as a signal of the degree of non-permanent components included in earnings.

The chapter proceeds as follows: Section 4.2 presents descriptive statistics and correlation coefficients. Section 4.3 describes the development of the variables for abnormal accruals. Section 4.4 discusses testing of the hypotheses and robustness checks. Section 4.5 concludes the chapter by summarising the analysis and findings.

4.2 DESCRIPTIVE STATISTICS AND CORRELATION COEFFICIENTS

4.2.1 Descriptive Statistics

The descriptive statistics for the key variables are presented in Table 4-1. The table separates the variables based on whether the magnitude of abnormal accruals, according to the modified Jones (Dechow et al., 1995) model, is high or low. High and low abnormal accruals are determined based on whether the firm's magnitude of abnormal accruals is higher or lower than the yearly cross-sectional median. This helps the analysis of descriptive statistics through the following:

1. Dividing the sample based on the magnitude of abnormal accruals empowers the investigation of whether corporate governance is more effective when managers have an incentive to manage earnings.

2. Separating firms into two groups enables the investigation of whether the market's response differs depending on the magnitude of abnormal accruals.
3. Sorting out firms into two groups based on indicators opportunistic managerial behaviour is expected to provide more information on the characteristics of the firm (i.e. risk and growth).

Table 4-1: Pooled Descriptive Statistics

Variable Name	Variable Symbol	High magnitudes of abnormal accruals		Low magnitudes of abnormal accruals		Full sample	
		Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Share Returns	AR _{jt}	0.173	1.019	0.092	0.520	0.131	0.800
Earnings per share	E _{jt}	0.054	0.140	0.047	0.137	0.050	0.139
Change in earnings per share	ΔE _{jt}	0.002	0.135	0.007	0.140	0.005	0.154
Ownership concentration	OWNCON _{jt}	0.672	0.173	0.670	0.166	0.671	0.169
Managerial ownership	OWNMAN _{jt}	0.137	0.610	0.214	2.278	0.177	1.694
Independent directors' ownership	OWNOUT _{jt}	0.085	0.165	0.072	0.186	0.078	0.176
Debt reliance	DEBTRL _{jt}	0.173	0.166	0.184	0.189	0.179	0.178
CEO dominance	CEO _{jt}	0.171	0.377	0.144	0.351	0.157	0.364
Board size	BRDSZE _{jt}	6.659	2.095	6.802	2.126	6.699	2.113
Board independence	BRDIND _{jt}	0.676	0.197	0.707	0.179	0.692	0.188
Audit committee independence	AUDIND _{jt}	0.807	0.290	0.831	0.274	0.820	0.282
Audit committee competence	AUDCMP _{jt}	0.561	0.319	0.572	0.324	0.567	0.321
Beta risk	BETA _{jt}	0.833	1.703	0.715	1.142	0.772	1.440
Firm Growth	GROWTH _{jt}	2.137	6.228	2.226	6.621	2.183	6.431

Table 4-1 shows that firms with low abnormal accruals display lower share returns and lower risk than firms with high abnormal accruals. The results relating to firm risk

are consistent with Sweeny (1994) who argued that risky firms are more likely to engage in earnings management to justify the greater risk.

In comparing the means for corporate governance variables, the results indicate that some variables differ depending on the magnitude of abnormal accruals and are in alignment with the study's propositions. For example, the means of board size show that larger boards are associated with low magnitudes of abnormal accruals. This is consistent with prior studies. Xie et al. (2003) and Chtourou et al. (2001) empirically find that larger boards are strongly associated with lower levels of earnings management.

The results of the descriptive statistics show the need to take into account the magnitude of abnormal accruals when analysing share returns and the impact of corporate governance attributes. These results are investigated further in the following sections.

4.2.2 Correlation Coefficients

Table 4-2 presents the Pearson correlations among share returns, the magnitude of abnormal accruals, and all corporate governance variables. The correlation coefficients were checked for the presence of high collinearity among regressors.⁷³

Table 4-2: Pearson correlations coefficients.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
AR (1)	1	-0.02	-0.02	0.04	-0.08*	-0.05	-0.01	-0.02	-0.03	-0.05	-0.13†
AAA [#] (2)		1	0.04	0.01	-0.09*	-0.13†	-0.10†	-0.04	0.003	-0.01	0.04
OWNCON (3)			1	0.02	0.01	-0.13†	-0.16†	-0.08*	-0.23†	-0.02	0.01
CEO (4)				1	-0.19†	-0.39	-0.32†	-0.22†	-0.002	0.01	-0.02
BRDSIZE (5)					1	0.22†	0.23†	0.11†	-0.10†	0.03	0.06
BRDIND (6)						1	0.54†	0.33†	0.02	-0.11†	0.17†
AUDIND (7)							1	0.61†	-0.12†	-0.08*	0.14†
AUDCMP (8)								1	-0.08*	-0.03	0.13†
OWNOUT (9)									1	0.03	-0.06
OWNMAN (10)										1	-0.03
DEBTRL (11)											1

* Correlation is significant at the 0.05 level (2-tailed)

† Correlation is significant at the 0.01 level (2-tailed)

The magnitude of abnormal accruals

⁷³ This test is motivated by Klein's (2002a) findings of multicollinearity between board characteristics and audit committee characteristics.

It is evident from the correlation coefficients in Table 4-2 that there is no high correlation among the variables. As a result, collinearity does not appear to pose a threat to the interpretation of regression coefficients of the independent variables, which are reported in the following subsections. The highest coefficient in Table 4-2 is (0.61), which is an indication of the likelihood of partial collinearity, which is found to be harmless after further testing using the condition index. Formal testing using the Belsley et al. (1980) condition indices on the full sample confirmed that harmful collinearity does not exist.⁷⁴ Next, the results of testing the hypotheses are discussed.

4.3 ABNORMAL ACCRUALS

Chapter Three presented the modified Jones (Dechow et al., 1995) model as a model used to estimate abnormal accruals. In order to estimate abnormal accruals, it is first necessary to calculate total accruals. Total accruals are calculated as the difference between earnings before extraordinary items and cash flows from operations (see Equation 13 in section 3.4.3.3).

The modified Jones (Dechow et al., 1995) model, represented by Equation 10, uses change in cash revenue and the level of property plant and equipment as the explanatory variables for predicting expected total accruals. Ordinary least squares (OLS) regression is used to estimate the equation by industry for each year. The resulting model (Equation 11) is then used to calculate abnormal accruals through the difference between actual and expected total accruals for each firm.

The calculation of total accruals covers 14 industries over four financial years. As the results of these calculations are too numerous to report efficiently, an example for one

⁷⁴ Warga (1989) shows that the condition index is a valid diagnostic for financial returns data. In this case, the condition index is 23.3, which is below the benchmark of 30.

industry is presented in Appendix (F). Additionally, Equation 10 is estimated for the full sample to demonstrate the explanatory power of the modified Jones (Dechow et al., 1995) model. Table 4-3 presents the estimated coefficients of the total accruals model.

Table 4-3: Estimation of the parameters of total accruals model for the full sample.

Equation 10: $TA_{i,g}/A_{i,g} = \gamma_0 (1/A_{i,g}) + \gamma_1 ((\Delta REV_{i,g} - \Delta REC_{i,g})/A_{i,g}) + \gamma_2 (PPE_{j,g}/A_{i,g})$				
Adjusted R² (F-Stat.)	γ_0	γ_1	γ_2	N
0.40 (170.29)***	-2806.99 (-1.78)*	-0.09 (-8.89)***	-0.91 (-2.56)***	778

TA = Total accruals, A = Beginning of year total assets, ΔREV = Change in net revenue, PPE = Property, plant, and equipment, j = denote firm from g industry group, and g = denote industry group.

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

The model is significant at the 1% level. The modified Jones (Dechow et al., 1995) model has an explanatory power of 40%. It allows for the estimation of abnormal accruals through deducting expected total accruals from actual total accruals (see Equation 11 in section 3.4.3.2).

Two approaches are used to incorporate abnormal accruals into the tested models. They are as follows:

1. When incorporating abnormal accruals as a dependent or an independent variable (i.e. first and second hypotheses), the magnitude of abnormal accruals is included as the estimated residuals of the modified Jones (Dechow et al., 1995) model.
2. When incorporating abnormal accruals as an interceding variable (i.e. fourth hypothesis), a dummy variable is used. The dummy variable is calculated using the yearly cross-sectional median of the magnitude of abnormal accruals. If the magnitude of abnormal accruals of a firm is higher than the sample's yearly cross-sectional median, then it is deemed as a high earnings management firm (dummy variable = 1). If the magnitude of abnormal accruals of a firm is lower than the

sample's yearly cross-sectional median, then it is deemed as a low earnings management firm (dummy variable = 0).

The magnitude of abnormal accruals is used as it is the size of the deviation of reported earnings rather than the direction that signifies earnings management. Table 4-4 provides a comparison of the mean magnitude of abnormal accruals for high and low earnings management firms.

Table 4-4: Mean of the magnitude of abnormal accruals for high and low earnings management firms.

	Mean		Difference in Means
	High Earnings Management	Low Earnings Management	
Magnitude of abnormal accruals	0.36	0.07	0.28 (36.68)***

*** Correlation is significant at the 0.01 level (2-tailed)

As abnormal accruals are scaled by total assets, the values can be interpreted as a percentage of total assets. For firms with high earnings management, the mean magnitude of abnormal accruals is 36% of total assets compared to only 7% for low earnings management firms.

The importance of abnormal accruals rests with the assumption that abnormal accruals represent managers' discretion over accruals. This assumption is validated through the results in Tables 4-3 and 4-4. Next, the hypotheses presented in Chapter Three are tested.

4.4 TESTS OF THE HYPOTHESES AND ROBUSTNESS CHECKS

When testing each hypothesis, pooled regressions are reported. Previous studies found that pooled regression results are likely to provide biased standard errors due to cross-sectional dependence in the regression residuals (e.g. Ali, 1994). Two steps were taken to

overcome the potential bias of standard errors (Barth et al., 2001a; Bernard, 1987). First, the standard errors from all pooled regressions were corrected using White (1980). Second, beside pooled coefficients, inference is also drawn from the mean coefficients of the yearly cross-section regressions (see Appendix G).

The study uses the returns-earnings (Easton and Harris, 1991) model as the basis for testing three out of the four hypotheses, within the Australian context. Given that earnings components are likely to include a mixture of permanent and non-permanent earnings, unexpected earnings are better captured by a weighted average of earnings level and earnings change (Cheng and Yang, 2003).

The testing of hypotheses Two, Three, and Four are conducted over four stages. First, the returns-earnings (Easton and Harris, 1991) model is tested irrespective of the proposed indicators of reliability (i.e. earnings management and corporate governance). Second, the returns-earnings model is tested after incorporating earnings management (Hypothesis Two), corporate governance (Hypothesis Three), or both (Hypothesis Four).

Third, the Wald test is used to make a formal comparison of the coefficient estimates. The Wald test is applied to each of these interactions. If the Wald test is significant for an interaction variable, it indicates that earnings response coefficients are significantly different after incorporating the interaction variable. Thus, the variable has a substantial effect on the returns-earnings (Easton and Harris, 1991) model.

Fourth, interaction variables that are deemed to have a substantial effect are analysed further. For instance, the adjusted R-squared after incorporating each interaction variable is compared. The variable producing the highest adjusted R-squared indicates higher information content relative to earnings.

The returns-earnings (Easton and Harris, 1991) model is based on testing the information content of earnings level and change in earnings. Table 4-5 presents the coefficients of the model irrespective of any proposed variables.

Table 4-5: The pooled earnings response coefficients of earnings level and change in earnings

$AR_{jt} = \beta_0 + \beta_1 E_{jt} + \beta_2 \Delta E_{jt} + \zeta_{jt}$	
Coefficient (t-statistic)	Pooled
Constant	-0.026 (-0.34)
E_{jt}	0.91 (1.84)*
ΔE_{jt}	0.06 (0.13)
R^2	0.10
F-value	28.48***

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Pooled represents the pooled GLS (random effect) regression.

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

The pooled response coefficients as well as mean estimates across results for each of the four individual years are presented in Table 4-5 and Appendix G. The results from Table 4-5 and Appendix G show that the pooled and mean response coefficients of earnings level and change in earnings (β_1 and β_2) are positive; and therefore provide incremental information content of earnings.

Only the pooled response coefficient for earnings level is significantly greater than zero at the 0.10 level. This is explained by Easton and Harris (1991), which suggests that earnings level becomes a better proxy for unexpected earnings only when earnings are transitory. Given that the Asian currency crisis occurred during the study period, it is likely that it has altered shareholders' perception of the permanence of earnings during the study period (or part of it).

The returns-earnings (Easton and Harris, 1991) model is used as the basis for testing hypotheses Two, Three, and Four. Given that the Wald test is used to make a formal comparison of the coefficient estimates, it is essential to test whether the pooled coefficients from Table 4-5 are misspecified. The F-value for the Ramsey RESET test ($F = 2.92$, $M = 1$, $d.f. = 773$) does not reject the null hypothesis ($\beta_M = 0$) (Ramsey, 1969). This indicates that the coefficients from Table 4-5 have no specification error at both levels (1% and 5%). Hence, findings from the Wald test are statistically adequate. Next, each hypothesis is tested and discussed.

4.4.1 Test Results for Hypothesis One

Hypothesis One relates corporate governance variables to the magnitude of abnormal accruals. Table 4-6 and Appendix G display the pooled and mean coefficients for the univariate and multivariate results of the association between corporate governance variables and the magnitude of abnormal accruals.

Table 4-6: The pooled regression of absolute value of abnormal accruals on empirical indicators of corporate governance

Does corporate governance influence earnings management?				
$AAA_j = \gamma_0 + \gamma_1 OWNCON_{jt} + \gamma_2 CEO_{jt} + \gamma_3 BRDSZE_{jt} + \gamma_4 BRDIND_{jt} + \gamma_5 AUDIND_{jt} + \gamma_6 AUDCMP_{ijt} + \gamma_7 OWNOUT_{jt} + \gamma_8 OWNMAN_{jt} + \gamma_9 DEBTRL_{jt} + u_j$				
Hypotheses	Corporate Governance	Pooled (univariate)	Pooled (multivariate)	Findings
H1A₀ $\gamma_1 \geq 0$	Ownership Concentration	0.14 (0.74)	0.05 (0.39)	Do not reject
H1B₀ $\gamma_2 \geq 0$	CEO dominance	0.02 (0.73)	-0.11 (-1.36)	Do not reject
H1C₀ $\gamma_3 \geq 0$	Board Size	-0.03 (-1.95)**	-0.02 (-1.93)*	Reject
H1D₀ $\gamma_4 \geq 0$	Board Independence	-0.43 (-1.39)	-0.42 (-1.26)	Do not reject
H1E₀ $\gamma_5 \geq 0$	Audit Committee Independence	-0.22 (-1.66)*	-0.12 (-2.39)**	Reject
H1F₀ $\gamma_6 \geq 0$	Audit Committee Competence	-0.08 (-1.38)	0.03 (1.12)	Do not reject
H1G₀ $\gamma_7 \geq 0$	Independent Directors' Ownership	0.01 (0.21)	-0.02 (-0.25)	Do not reject
H1H₀ $\gamma_8 \geq 0$	Managerial Ownership	-0.004 (-1.39)	-0.01 (-1.32)	Do not reject
H1I₀ $\gamma_9 \geq 0$	Debt Reliance	0.16 (0.70)	0.26 (0.89)	Do not reject

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Pooled represents the pooled GLS (random effect) regression.

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

The results show that board size and audit committee independence have an inverse significant impact on the magnitude of abnormal accruals on a consistent basis. The pooled coefficients of board size and audit committee independence are significant greater than zero univariately and multivariately. The mean response coefficients also support the significance of board size and on a multivariate level audit committee independence (see Appendix G). The results are supported by the corporate governance literature as follows:

1. The negative association between board size and the empirical indicator of earnings management is similar to the findings of Xie et al. (2003) and Chtourou

et al. (2001). They found that larger boards are strongly associated with lower levels of earnings management. The findings of the current study support John and Senbet's (1998) argument that an increase in board size increases the board's monitoring capacity.

2. The negative association between audit committee independence and the empirical indicator of earnings management is similar to the findings of Klein (2002b). She finds that earnings management is associated with a dichotomous variable of whether or not the audit committee has a majority of outside directors.

Given that primarily board size and audit committee independence display significant results, this highlights the argument raised by Klein (2002a) that board committee (i.e. audit committee) assignments are influenced by board size since large boards have more directors to spread around. As such, she suggests that board monitoring is increasing in board size due to the ability to distribute the work load over a greater number of observers.

Seven of the nine attributes did not show significant results, which is likely due to one (or more) of the following reasons:

1. The impact of some attributes goes beyond the association into directly influencing either the actual integrity of the financial reporting process or shareholders' perception of the integrity of the financial reporting process.
2. The lack of a special event may have played a role in that the abnormal accruals were not variate enough for such an association to show statistically significant results.
3. Unlike board size, it could be argued that other attributes were represented by a percentage. Thus, there is low variability in the cross-sectional observations. This

is supported by the high standard deviation of board size compared to other attributes (see Table 4-3).

Although not significant, some researchers might be encouraged by the point that board independence and managerial ownership provide the predicted sign through out all the different tests. This emphasis the role expected from corporate governance in reducing managerial behaviour.

The current study supports the view that the significance of corporate governance is not appreciated unless shareholders react to it. If shareholders respond to corporate governance's improvement to the reliability of earnings, then corporate governance should improve the earnings response coefficients. The following hypotheses extend the link by examining the regression of earnings response coefficients as measured by Easton and Harris (1991). Next, the returns-earnings (Easton and Harris, 1991) model is tested after incorporating the proposed variables according to each hypothesis.

4.4.2 Test Results for Hypothesis Two

The second hypothesis focuses on the impact of the empirical indicator of earnings management on the earnings response coefficients. The results are illustrated in Table 4-7.

Table 4-7: The pooled results of regressing earnings response coefficients on the absolute value of abnormal accruals

Does earnings management influence the informativeness of earnings?						
$AR_j = \beta_0 + \alpha_0 E_{jt} + \alpha_1 EAAA_{jt} + \psi_0 \Delta E_{jt} + \psi_1 \Delta EAAA_{jt} + \zeta_j$						
Hypothesis		E_{jt}	$EAAA_{jt}$	ΔE_{jt}	$\Delta EAAA_{jt}$	Findings
H2₀ $(\alpha_0 + \alpha_1) \geq \beta_1, (\psi_0 + \psi_1) \geq \beta_2$	Pooled	1.15 (1.91)*	-1.04 (-2.41)**	0.01 (0.22)	-0.08 (-0.77)	Do not reject
	Wald	0.819		0.004		

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Pooled represents the pooled GLS (random effect) regression.

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

The empirical indicator of earnings management is expected to reduce the earnings response coefficient, because it reflects the degree of non-permanent earnings components contained in reported earnings. The results in Table 4-7 show the incremental sensitivity of the earnings response coefficient to the empirical indicator of earnings management.

The Wald test is not significant. Although a few studies found a link between abnormal accruals and the earnings response coefficients, most studies tested the link during a special event (i.e. initial public offerings). It could be argued that testing a long term interval (i.e. annually) and not focusing on a specific event might have contributed to the insignificance of the Wald test.

Although the Wald test is not significant, some researchers could take comfort in the aspect that the signs of the pooled and mean coefficients support the alternate hypothesis. The negative coefficients (α , pooled = -1.04 and mean = -2.34) indicate that when earnings level is accompanied with large abnormal accruals, the market's response to earnings significantly declines. This evidence is supported by Ali and Hwang (1995). They find that as accruals management increases, the slope of earnings response coefficients decreases.

Inclusion of interaction variables that represent the magnitude of abnormal accruals slightly improves the explanatory power of the returns-earnings model as reflected in the pooled and mean adjusted R-squared (10.4% and 15%, respectively). The adjusted R-squared after incorporating the magnitude of abnormal accruals is higher than the adjusted R-squared in Table 4-5 before incorporating any interacting variable (pooled 9.9% and mean 11%). Hence, the empirical indicator of earnings management, as a

source of information relating to earnings reliability, increases the overall explanatory power of earnings.⁷⁵

The study takes these findings further by testing the impact of the magnitude of abnormal accruals, as moderator, on the relationship between corporate governance and the information content of accounting earnings (Hypothesis Four). Next, the other indicator of earnings reliability (corporate governance) is tested irrespective of earnings management (Hypothesis Three).

4.4.3 Test Results for Hypothesis Three

The third hypothesis focuses on the impact of corporate governance on the earnings response coefficients, as illustrated in Equation 14. The results are illustrated in Table 4-8.

Equation 14: Regressions of earnings response coefficients on corporate governance variables.

$$AR_j = \beta_0 + \phi_0 E_{jt} + \phi_1 E_{jt} D_1 OWNCON_{jt} + \phi_2 E_{jt} CEO_{jt} + \phi_3 E_{jt} D_2 BRDSZE_{jt} + \phi_4 E_{jt} D_3 BRDIND_{jt} + \phi_5 E_{jt} AUDIND_{jt} + \phi_6 E_{jt} D_4 AUDCMP_{jt} + \phi_7 E_{jt} D_5 OWNOUT_{jt} + \phi_8 E_{jt} D_6 OWNMAN_{jt} + \phi_9 E_{jt} D_7 DEBTRL_{jt} + \lambda_0 \Delta E_{jt} + \lambda_1 \Delta E_{jt} D_1 OWNCON_{jt} + \lambda_2 \Delta E_{jt} CEO_{jt} + \lambda_3 \Delta E_{jt} D_2 BRDSZE_{jt} + \lambda_4 \Delta E_{jt} D_3 BRDIND_{jt} + \lambda_5 \Delta E_{jt} AUDIND_{jt} + \lambda_6 \Delta E_{jt} D_4 AUDCMP_{jt} + \lambda_7 \Delta E_{jt} D_5 OWNOUT_{jt} + \lambda_8 \Delta E_{jt} D_6 OWNMAN_{jt} + \lambda_9 \Delta E_{jt} D_7 DEBTRL_{jt} + \varepsilon_j$$

⁷⁵ Prior studies use change in earnings (or the magnitude of change in earnings) as an indicator of the level of non-permanent earnings (Cheng et al., 1994). As a result, it can be assumed that the empirical indicator of earnings management is a source of information relating to unexpected earnings and a substitute to change in earnings, as an indicator of the degree of non-permanent earnings (see Cheng et al., 1996 for details). Hence, the empirical indicator of earnings management is likely to replace the value relevance of change in earnings.

Table 4-8: The pooled results of regressing earnings response coefficients on the empirical indicators of corporate governance.

Does corporate governance influence earnings informativeness?						
Hypotheses	Corporate Governance	Earnings Type	Pooled (univariate)	Pooled (multivariate)	Wald Stat.	Findings
H3A₀ $(\varphi_0 + \varphi_1) \leq \beta_1, (\lambda_0 + \lambda_1) \leq \beta_2$	Ownership Concentration	E	1.59 (2.42)**	1.25 (3.45)***	0.9	Do not reject
		ΔE	-0.29 (-0.44)	0.30 (0.53)	0.02	
H3B₀ $(\varphi_0 + \varphi_2) \geq \beta_1, (\lambda_0 + \lambda_2) \geq \beta_2$	CEO dominance	E	-3.93 (-3.21)***	-3.82 (-2.83)***	5.62**	Reject^a
		ΔE	1.28 (3.58)***	1.66 (1.94)**	1.75	
H3C₀ $(\varphi_0 + \varphi_3) \leq \beta_1, (\lambda_0 + \lambda_3) \leq \beta_2$	Board Size	E	0.05 (1.03)	-0.06 (-3.55)***	0.003	Do not reject
		ΔE	-0.02 (-0.40)	0.11 (3.02)***	0.0002	
H3D₀ $(\varphi_0 + \varphi_4) \leq \beta_1, (\lambda_0 + \lambda_4) \leq \beta_2$	Board Independence	E	0.11 (0.12)	-0.99 (-0.94)	0.01	Do not reject
		ΔE	-0.63 (-1.10)	0.78 (2.11)**	0.21	
H3E₀ $(\varphi_0 + \varphi_5) \leq \beta_1, (\lambda_0 + \lambda_5) \leq \beta_2$	Audit Committee Independence	E	1.13 (1.41)	-0.58 (-0.78)	0.02	Do not reject
		ΔE	0.95 (0.87)	1.72 (0.62)	0.01	
H3F₀ $(\varphi_0 + \varphi_6) \leq \beta_1, (\lambda_0 + \lambda_6) \leq \beta_2$	Audit Committee Competence	E	1.84 (3.77)***	1.62 (4.43)***	2.45	Do not reject
		ΔE	-1.08 (-1.00)	-1.62 (-3.22)***	0.47	
H3G₀ $(\varphi_0 + \varphi_7) \leq \beta_1, (\lambda_0 + \lambda_7) \leq \beta_2$	Independent Directors' Ownership	E	1.44 (2.26)**	-0.25 (-0.11)	1.8	Do not reject ^b
		ΔE	-2.20 (-5.44)***	-1.28 (-0.34)	6.51**	
H3H₀ $(\varphi_0 + \varphi_8) \leq \beta_1, (\lambda_0 + \lambda_8) \leq \beta_2$	Managerial Ownership	E	-0.10 (-0.54)	-0.07 (-0.44)	0.02	Do not reject
		ΔE	0.32 (7.17)***	0.30 (4.54)***	0.21	
H3I₀ $(\varphi_0 + \varphi_9) \leq \beta_1, (\lambda_0 + \lambda_9) \leq \beta_2$	Debt Reliance	E	-0.25 (-0.20)	-0.02 (-0.04)	0.004	Do not reject
		ΔE	-1.77 (-2.28)**	-3.45 (-2.23)**	2.25	

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Pooled represents the pooled GLS (random effect) regression.

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

a The null hypothesis is only rejected for earnings level.

b Although the Wald test is significant, the coefficients are significant in the opposite direction of the alternate hypothesis.

Although the results from Table 4-8 are not consistent in explaining the relationship, the Wald test emphasises that the incorporation of two corporate governance variables alters the earnings response coefficients significantly. CEO dominance and independent directors' ownership have significant influence over the returns-earnings regressions. While the empirical indicator of CEO dominance displays significant coefficients through out all the tests, the empirical indicator of independence displays significant results only at the univariate level. Accordingly, these two attributes are analysed further (see Table 4-9).

Table 4-9: Pooled GLS univariate regressions of earnings response coefficients on CEO dominance.

Coefficient (t-statistic)	Constant	E_{jt}	ECG_{jt}	ΔE_{jt}	ΔECG_{jt}	R^2	F-value
CEO_{jt}	-0.04 (-0.49)	1.67 (8.05)***	-3.93 (-3.21)***	-0.36 (-1.25)	1.28 (3.58)***	0.16	30.64***
$OWNOUT_{jt}$	-0.03 (-0.33)	0.73 (1.52)	1.44 (2.26)**	0.34 (0.78)	-2.20 (-5.44)***	0.10	18.53***

4.4.3.1 CEO Dominance

Equation 15: Univariate regression of earnings response coefficients on CEO dominance.

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi_2 E_{jt} CEO_{jt} + \lambda_0 \Delta E_{jt} + \lambda_2 \Delta E_{jt} CEO_{jt} + \varepsilon_j$$

The results in Table 4-9 show the incremental sensitivity of the earnings response coefficients to the empirical indicator of CEO dominance. The findings, as derived from Equation 15, are as follows:

1. While the summed coefficients ($\varphi_2 + \lambda_2$) capture the additional information content when CEO dominance is present, the summed coefficients ($\varphi_0 + \lambda_0$) are expected to capture the additional information content when CEO dominance is absent. The

summed pooled earnings coefficients interacting with the presence of CEO dominance ($\phi_2 + \lambda_2$) equals -2.65, which is negative and significant. The summed pooled earnings coefficients interacting with the absence of CEO dominance ($\phi_0 + \lambda_0$) equals 1.31, which is positive, but insignificant. Nonetheless, it might be reassuring to some researchers that the signs of both summed earnings coefficients support the role of CEO dominance in decreasing the incremental sensitivity of the earnings response coefficients.

2. Similarly, the mean response coefficients capturing CEO dominance are also negative and significant, which supports the findings of the pooled response coefficients that CEO dominance has incremental information content relating to earnings (see Appendix G).
3. The adjusted R-squared of the returns-earnings model after incorporating CEO dominance is 16% up from the original 9.9%. This suggests that CEO dominance is a source of value relevant information.
4. At earnings level (where the Wald statistic is significant), the coefficient ($\phi_2 = -3.93$, $t = -3.21$) shows a negative sign at significant level when the dummy variable representing CEO dominance equals one, which supports the alternative hypothesis (**H3B₁**: $(\phi_0 + \phi_2) < \beta_1$ **[not rejected]**). This can be interpreted that the market responds negatively to earnings level when the CEO is dominant. The market also responds positively to earnings level when the CEO is not dominant, which is the coefficient ($\phi_0 = 1.67$, $t = 8.05$) when the dummy variable of CEO dominance equals zero. This signifies the role CEO dominance plays in shaping investors perception of reported earnings.

The findings imply that the effect of earnings on share returns is inversely related to CEO dominance. These findings support the findings of prior studies (i.e. Anderson et al., 2003). Anderson et al. (2003) find that the separation between CEO and board chair positions appear to positively influence the information content of accounting earnings. The findings also support the argument that the financial reporting integrity decreases when the chairman of the board is not independent of management (Finkelstein and D'Aveni, 1994). Next, the independent directors' ownership is investigated.

4.4.3.2 Independent Directors' Ownership

Equation 16: Univariate regression of earnings response coefficients on independent directors' ownership.

$$AR_j = \beta_0 + \phi_0 E_{jt} + \phi_7 E_{jt} D_5 OWNOUT_{jt} + \lambda_0 \Delta E_{jt} + \lambda_7 \Delta E_{jt} D_5 OWNOUT_{jt} + \varepsilon_j$$

The results in Table 4-9 show the incremental sensitivity of the earnings response coefficients to the empirical indicator of independent directors' ownership. The findings, as derived from Equation 16, are as follows:

1. While the summed coefficients ($\phi_7 + \lambda_7$) capture the additional information content when independent directors' ownership is high, the summed coefficients ($\phi_0 + \lambda_0$) are expected to capture the additional information content when independent directors' ownership is low. The summed pooled earnings coefficients interacting with the high independent directors' ownership ($\phi_7 + \lambda_7$) equals -0.76, which is negative and significant. The summed pooled earnings coefficients interacting with the low ownership of independent directors ($\phi_0 + \lambda_0$) equals 1.07, which is positive, but insignificant. The signs of both summed earnings coefficients support the null hypothesis, which seems to follow the notion that high ownership

may cause independent directors to act opportunistically. Hence, high independent directors' ownership reduces the earnings response coefficients.

2. The mean response coefficients from Appendix G support the findings of the pooled response coefficients that independent directors' ownership decreases the incremental information content of earnings.
3. The adjusted R-squared of the returns-earnings model after incorporating independent directors' ownership is 10.1% up from the original 9.9%. This shows that independent directors' ownership increases the value relevance of earnings.
4. At earnings change (where the Wald statistic is significant), the coefficient ($\phi_7 = -2.20$, $t = -5.44$) shows a negative sign at significant level when independent directors' ownership is high, which does not support the alternative hypothesis (**H3G₁: $(\lambda_0 + \lambda_7) > \beta_2$ [Rejected]**), because the findings support $(\lambda_0 + \lambda_7) < \beta_2$). This can be interpreted that the market responds negatively to earnings change when the equity stakes of independent directors' in the firm are high. Hence, it supports an alternative view that directors are likely to change their objectives to enhance personal wealth by supporting policies that temporarily increase share prices.

These findings are contrary to the views of regulators (Hampel report, 1997) and the findings of prior studies (Bhagat and Black, 1999; Bhagat et al., 1999). The findings in the current study side with the view that high independent directors' ownership motivates directors to act in their own interests rather than the interests of shareholders.

Although seven of the attributes were not significant according to the Wald test, some researchers could take comfort in that the pooled coefficients of four attributes (ownership concentration, audit committee competence, managerial ownership, and debt reliance) are significantly different from zero (see Table 4-8). It can be argued that such

corporate governance attributes are even more effective when managers have a strong incentive to act opportunistically. Thus, not conditioning the link on the magnitude of abnormal accruals could have contributed to the insignificant Wald test. The fourth hypothesis extends the link by examining the combined impact of the empirical indicators of corporate governance and earnings management on the overall explanatory power of earnings.

When comparing the adjusted R-square from Equation 5 (pooled = 19% and mean = 26.9%) to the adjusted R-square from Equation 3 (pooled = 2% and mean = 4.4%), the comparison indicates that corporate governance has a greater role in influencing shareholders' perception than merely reducing earnings management. Next, earnings management is used to condition the link between corporate governance variables and the earnings response coefficients.

4.4.4 Test Results for Hypothesis Four

The fourth hypothesis focuses on the impact of corporate governance on the earnings response coefficients after conditioning on earnings management as illustrated in Equation 17. The fourth hypothesis is based on the view that the relationship between the empirical indicators of corporate governance and earnings response coefficients is empowered when managers have a strong incentive to act opportunistically. Firms with high magnitudes of abnormal accruals are deemed to have an incentive to manage earnings, because managers manage earnings only when they have an incentive to do so.

Corporate governance is most needed when managers have an incentive to act opportunistically.⁷⁶ The pooled results are illustrated in Table 4-10.

Equation 17: Regression of earnings response coefficients on corporate governance variables conditioned on the magnitude abnormal accruals.

$$AR_j = \beta_0 + \phi_0 E_{jt} + \phi_1 E_{jt} D_0 D_1 OWNCON_{jt} + \phi_2 E_{jt} D_0 CEO_{jt} + \phi_3 E_{jt} D_0 D_2 BRDSZE_{jt} + \phi_4 E_{jt} D_0 D_3 BRDIND_{jt} + \phi_5 E_{jt} D_0 AUDIND_{jt} + \phi_6 E_{jt} D_0 D_4 AUDCMP_{jt} + \phi_7 E_{jt} D_0 D_5 OWNOUT_{jt} + \phi_8 E_{jt} D_0 D_6 OWNMAN_{jt} + \phi_9 E_{jt} D_0 D_7 DEBTRL_{jt} + \lambda_0 \Delta E_{jt} + \lambda_1 \Delta E_{jt} D_0 D_1 OWNCON_{jt} + \lambda_2 \Delta E_{jt} D_0 CEO_{jt} + \lambda_3 \Delta E_{jt} D_0 D_2 BRDSZE_{jt} + \lambda_4 \Delta E_{jt} D_0 D_3 BRDIND_{jt} + \lambda_5 \Delta E_{jt} D_0 AUDIND_{jt} + \lambda_6 \Delta E_{jt} D_0 D_4 AUDCMP_{jt} + \lambda_7 \Delta E_{jt} D_0 D_5 OWNOUT_{jt} + \lambda_8 \Delta E_{jt} D_0 D_6 OWNMAN_{jt} + \lambda_9 \Delta E_{jt} D_0 D_7 DEBTRL_{jt} + \epsilon_j$$

There are two major findings from the tests shown in Table 4-10 and Appendix G. First, the multivariate pooled and mean adjusted R-squared after conditioning on the empirical indicator of earnings management are (22% and 36.8%, respectively) higher than the adjusted R-squared before conditioning on earnings management. This means incorporating indicators of earnings reliability (i.e. corporate governance and earnings management) with earnings explains share returns more than twice as do earnings independently. Hence, the overall explanatory power of earnings improves due to combining the empirical indicators of corporate governance and earnings management.

Second, after conditioning on earnings management, the Wald test shows an increase in the number of significant corporate governance variables from two significant variables (*see* Table 4-8) to five significant variables (*see* Table 4-10). The five variables are the empirical indicators of ownership concentration, CEO dominance, audit committee competence, independent directors' ownership and debt reliance. The results of the Wald test indicate that the earnings response coefficients are significantly different after incorporating these variables.

⁷⁶ This is reflected by the larger number of significant corporate governance attributes compared to the previous test (before conditioning on earnings management).

Table 4-10: The pooled results of regressing earnings response coefficient on the empirical indicators of corporate governance conditioned on the empirical indicator of earnings management

Does corporate governance influence earnings informativeness in the presence of earnings management?						
Hypothesis	Corporate Governance	Earnings Type	Pooled (univariate)	Pooled (multivariate)	Wald Stat.	Findings
H4A₀ ($\varphi_0 + \varphi_1 \leq \beta_1, (\lambda_0 + \lambda_1) \leq \beta_2$)	Ownership Concentration	E	2.37 (3.73)***	2.27 (1.79)*	3.85**	Reject^a
		ΔE	-0.48 (-1.64)*	1.20 (1.44)	0.22	
H4B₀ ($\varphi_0 + \varphi_2 \geq \beta_1, (\lambda_0 + \lambda_2) \geq \beta_2$)	CEO dominance	E	-4.31 (-2.14)**	-4.51 (-2.58)***	3.4*	Reject^a
		ΔE	1.64 (2.38)**	2.97 (6.30)***	2.38	
H4C₀ ($\varphi_0 + \varphi_3 \leq \beta_1, (\lambda_0 + \lambda_3) \leq \beta_2$)	Board Size	E	0.08 (1.19)	-0.12 (-1.01)	0.00	Do not reject
		ΔE	-0.05 (-1.02)	0.40 (17.86)***	0.00	
H4D₀ ($\varphi_0 + \varphi_4 \leq \beta_1, (\lambda_0 + \lambda_4) \leq \beta_2$)	Board Independence	E	0.50 (0.24)	-1.09 (-0.52)	0.03	Do not reject
		ΔE	-0.25 (-0.35)	2.33 (3.12)***	0.05	
H4E₀ ($\varphi_0 + \varphi_5 \leq \beta_1, (\lambda_0 + \lambda_5) \leq \beta_2$)	Audit Committee Independence	E	1.19 (1.33)	0.41 (0.44)	0.54	Do not reject
		ΔE	-0.12 (-0.13)	-0.30 (-0.34)	0.01	
H4F₀ ($\varphi_0 + \varphi_6 \leq \beta_1, (\lambda_0 + \lambda_6) \leq \beta_2$)	Audit Committee Competence	E	3.08 (8.98)***	3.12 (3.16)***	14.33***	Reject^a
		ΔE	-2.44 (-2.32)**	-3.27 (-2.91)***	3.42*	
H4G₀ ($\varphi_0 + \varphi_7 \leq \beta_1, (\lambda_0 + \lambda_7) \leq \beta_2$)	Independent Directors' Ownership	E	1.14 (0.94)	-0.72 (-0.21)	0.51	Do not reject ^b
		ΔE	-2.36 (-9.59)***	-9.83 (-9.09)***	10.37***	
H4H₀ ($\varphi_0 + \varphi_8 \leq \beta_1, (\lambda_0 + \lambda_8) \leq \beta_2$)	Managerial Ownership	E	-0.01 (-0.05)	0.41 (0.66)	0.00	Do not reject
		ΔE	-1.07 (-1.71)*	-4.80 (-1.16)	1.3	
H4I₀ ($\varphi_0 + \varphi_9 \leq \beta_1, (\lambda_0 + \lambda_9) \leq \beta_2$)	Debt Reliance	E	0.53 (0.46)	-1.15 (-0.87)	0.18	Do not reject ^b
		ΔE	-3.10 (-2.40)**	-0.33 (-0.23)	4.33**	

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Pooled represents the pooled GLS (random effect) regression.

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

a The null hypothesis is only rejected for earnings level.

b Although the Wald test is significant, the coefficients are significant in the opposite direction of the alternate hypothesis.

The five significant attributes are analysed further in following paragraphs.

Table 4-11 displays all parameters of the Pooled GLS univariate regressions.⁷⁷

Table 4-11: Pooled GLS univariate regressions of earnings response coefficients on corporate governance variables conditioned on abnormal accruals

Coefficient (t-statistic)	Constant	E _{jt}	ECG _{jt}	ΔE _{jt}	ΔECG _{jt}	R ²	F-value
OWNCON _{jt}	-0.01 (-0.17)	0.33 (0.77)	2.37 (3.73)***	0.23 (0.60)	-0.48 (-1.64)*	0.12	21.54***
CEO _{jt}	-0.04 (-0.50)	1.35 (4.06)***	-4.31 (-2.14)**	-0.19 (-0.54)	1.64 (2.38)**	0.14	27.28***
AUDCMP _{jt}	-0.05 (-0.60)	0.65 (1.48)	3.08 (8.98)***	0.20 (0.41)	-2.44 (-2.32)**	0.12	21.62***
OWNOUT _{jt}	-0.02 (-0.32)	0.76 (1.73)*	1.14 (0.94)	0.30 (0.75)	-2.36 (-9.59)***	0.10	18.64***
DEBTRL _{jt}	-0.03 (-0.43)	0.97 (1.60)	0.53 (0.46)	0.18 (0.42)	-3.10 (-2.40)**	0.10	17.99***

4.4.4.1 Ownership concentration

Equation 18: Univariate regression of earnings response coefficients on ownership concentration conditioned on the magnitude of abnormal accruals.

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi_1 E_{jt} D_0 D_1 OWNCON_{jt} + \lambda_0 \Delta E_{jt} + \lambda_1 \Delta E_{jt} D_0 D_1 OWNCON_{jt} + \varepsilon_j$$

The results in Table 4-11 show the incremental sensitivity of the earnings response coefficients to the empirical indicator of ownership concentration. The findings, as derived from Equation 18, are as follows:

⁷⁷ As can be noted from Table 4-11, all coefficients for earnings changes (except for CEO dominance) after incorporate corporate governance are negative, while the coefficients for earnings level are positive after incorporate corporate governance. The signs of the coefficients indicate that when an increase in earnings level is due to high earnings changes caused by high earnings management, the market response to total earnings declines. This is demonstrated by the decline in the summed coefficients. This is explained by Cheng et al. (1996) that the market perceives change in earnings as transitory. Hence, if earnings level is a result of high change in earnings, then the market discounts for the component that is influenced by change in earnings.

1. While the summed coefficients ($\varphi_1 + \lambda_1$) capture the additional information content when ownership concentration and earnings management are high, the summed coefficients ($\varphi_0 + \lambda_0$) are expected to capture the additional information content when ownership concentration or earnings management are low. The sum of the pooled earnings coefficients interacting with high ownership concentration and earnings management ($\varphi_1 + \lambda_1$) equals 1.89, which is positive and significant. The summed pooled earnings coefficients interacting with the low ownership concentration or earnings management ($\varphi_0 + \lambda_0$) equals 0.56, which is lower than the first summed earnings coefficients positive, but insignificant. Nonetheless, the both summed earnings coefficients support the role of ownership concentration and earnings management in increasing the incremental sensitivity of the earnings response coefficients.
2. Similarly, the univariate mean response coefficients from Appendix G support the findings of the pooled response coefficients that ownership concentration and earnings management jointly have incremental information content relating to earnings.
3. The adjusted R-squared of the returns-earnings model after incorporating ownership concentration jointly with earnings management is 11.7% up from the original 9.9%. This suggests that the ownership concentration and earnings management combined increase the value relevance of earnings.
4. At earnings level (where the Wald statistic is significant), the coefficient ($\varphi_1 = 2.37, t = 3.73$) shows a positive sign at significant level when the ownership concentration and earnings management are high, which supports the alternative hypothesis (**H4A₁: ($\varphi_0 + \varphi_1$) > β_1 [not rejected]**). This can be interpreted that the

market responds positively to earnings level when large shareholders exist and managers have an incentive to manage earnings.

4.4.4.2 CEO dominance

Equation 19: Univariate regression of earnings response coefficients on CEO dominance conditioned on the magnitude of abnormal accruals.

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi_2 E_{jt} D_0 CEO_{jt} + \lambda_0 \Delta E_{jt} + \lambda_2 \Delta E_{jt} D_0 CEO_{jt} + \varepsilon_j$$

The results in Table 4-11 show the incremental sensitivity of the earnings response coefficients to the empirical indicator of CEO dominance. The findings, as derived from Equation 19, are as follows:

1. While the summed coefficients ($\varphi_2 + \lambda_2$) capture the additional information content when the CEO is dominant and earnings management is high, the summed coefficients ($\varphi_0 + \lambda_0$) are expected to capture the additional information content when the CEO is not dominant or earnings management is low. The sum of the pooled earnings coefficients interacting with CEO dominance and high earnings management ($\varphi_2 + \lambda_2$) equals -2.67, which is negative and significant. The summed pooled earnings coefficients interacting with the chairman independence or low earnings management ($\varphi_0 + \lambda_0$) equals 1.16, which is positive, but only significant at earnings level. Nevertheless, both summed earnings coefficients support the combined role of CEO dominance and earnings management in decreasing the earnings response coefficients.
2. Although not significant, some researchers might find comfort in the point that the signs of the mean response coefficients from Appendix G support the findings of

the pooled response coefficients that CEO dominance and earnings management jointly have decremental information content relating to earnings.

3. The adjusted R-squared of the returns-earnings model after incorporating CEO dominance jointly with earnings management is 14.5% up from the original 9.9%. Although the explanatory power is lower than in Hypothesis Three, this still supports the evidence that CEO dominance combined with earnings management increases the value relevance of earnings.
4. At earnings level (where the Wald statistic is significant), the coefficient ($\phi_1 = -4.31$, $t = -2.14$) shows a negative sign at significant levels when the dummy variables representing CEO dominance and high earnings management equal one, which supports the alternative hypothesis (**H4B₁**: $(\phi_0 + \phi_2) < \beta_1$ [**not rejected**]). This can be interpreted that the market responds negatively to earnings level when the CEO is dominant and earnings management is high.

4.4.4.3 Audit committee competence

Equation 20: Univariate regression of earnings response coefficients on audit committee competence conditioned on the magnitude of abnormal accruals.

$$AR_j = \beta_0 + \phi_0 E_{jt} + \phi_6 E_{jt} D_0 D_4 AUDCMP_{jt} + \lambda_0 \Delta E_{jt} + \lambda_6 \Delta E_{jt} D_0 D_4 AUDCMP_{jt} + \varepsilon_j$$

The results in Table 4-11 show the incremental sensitivity of the earnings response coefficients to the empirical indicator of audit committee competence. The findings, as derived from Equation 20, are as follows:

1. Given that the Wald statistic is significant at earnings level and change, the summed earnings response coefficients are the focus of the analysis. While the summed coefficients ($\phi_6 + \lambda_6$) capture the additional information content when

audit committee competence and earnings management are high, the summed coefficients ($\phi_0 + \lambda_0$) are expected to capture the additional information content when audit committee competence or earnings management are low. The sum of the pooled earnings coefficients interacting with high audit committee competence and earnings management ($\phi_6 + \lambda$) equals 0.64, which is positive and significant. The summed pooled earnings coefficients interacting with the low audit committee competence or earnings management ($\phi_0 + \lambda_0$) equals 0.85, which is higher than the first summed earnings coefficients, positive, and insignificant. Although the findings relating to audit committee competence are not decisive at this stage, only the significant coefficients indicate that audit committee competence and earnings management collectively increase the incremental sensitivity of the earnings response coefficients. The significant coefficients also demonstrate that audit committee competence and earnings management collectively are incremental on earnings level and decremental on earnings change. Thus, the alternate hypothesis is not rejected (**H4F₁: ($\phi_0 + \phi_6$) > β_1 [not rejected]**).

2. The mean response coefficients from Appendix G are not distant from the pooled response coefficients.
3. The adjusted R-squared of the returns-earnings model after incorporating audit committee competence jointly with earnings management is 11.7% up from the original 9.9%. This suggests that audit committee competence and earnings management combined provide information that increases the value relevance of earnings.

4.4.4.4 Independent directors' ownership

Equation 21: Univariate regression of earnings response coefficients on independent directors' ownership conditioned on the magnitude of abnormal accruals.

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi_7 E_{jt} D_0 D_5 OWNOUT_{jt} + \lambda_0 \Delta E_{jt} + \lambda_7 \Delta E_{jt} D_0 D_5 OWNOUT_{jt} + \varepsilon_j$$

The results in Table 4-11 show the incremental sensitivity of the earnings response coefficients to the empirical indicator of independent directors' ownership. The findings, as derived from Equation 21, are as follows:

1. While the summed coefficients ($\varphi_7 + \lambda_7$) capture the additional information content when independent directors' ownership and earnings management are high, the summed coefficients ($\varphi_0 + \lambda_0$) are expected to capture the additional information content when independent directors' ownership or earnings management are low. The sum of the pooled earnings coefficients interacting with high independent directors' ownership and earnings management ($\varphi_7 + \lambda_7$) equals -1.22, which is negative and significant at earnings change. The summed pooled earnings coefficients interacting with the low independent directors' ownership or earnings management ($\varphi_0 + \lambda_0$) equals 1.36, which is higher than the first summed earnings coefficients, positive, and significant at earnings level. Both summed earnings coefficients support the combined role of independent directors' ownership and earnings management in decreasing the incremental sensitivity of the earnings response coefficients.
2. Although not significant, some researchers are likely to take comfort in that the signs of the mean response coefficients from Appendix G match the signs of the pooled response coefficients.

3. The adjusted R-squared of the returns-earnings model after incorporating independent directors' ownership jointly with earnings management is 10.2% up from the original 9.9%, which is slightly higher than the R-squared in Hypothesis Three. This suggests that Independent directors' ownership and earnings management combined to some extent increases the value relevance of earnings.
4. At earnings change (where the Wald statistic is significant), the coefficient ($\lambda_7 = -2.36$, $t = -9.59$) shows a negative sign at significant level when independent directors' ownership and earnings management are high, which does not support the stated hypothesis (**H4A₁: ($\lambda_0 + \lambda_7$) > β_1 [rejected]**, because it supports ($\lambda_0 + \lambda_7$) < β_1). This can be interpreted that the market responds negatively to earnings change when independent directors' ownership and earnings management are high.

4.4.4.5 Debt reliance

Equation 22: Univariate regression of earnings response coefficients on debt reliance conditioned on the magnitude of abnormal accruals.

$$AR_j = \beta_0 + \phi_0 E_{jt} + \phi_9 E_{jt} D_0 D_7 DEBTRL_{jt} + \lambda_0 \Delta E_{jt} + \lambda_9 \Delta E_{jt} D_0 D_7 DEBTRL_{jt} + \varepsilon_j$$

The results in Table 4-11 show the incremental sensitivity of the earnings response coefficients to the empirical indicator of debt reliance. The findings, as derived from Equation 22 are, as follows:

1. While the summed coefficients ($\phi_9 + \lambda_9$) capture the additional information content when debt reliance and earnings management are high, the summed coefficients ($\phi_0 + \lambda_0$) are expected to capture the additional information content when debt reliance or earnings management are low. The sum of the pooled earnings

coefficients interacting with high debt reliance and earnings management ($\phi_9 + \lambda_9$) equals -2.57, which is negative and significant at earnings change. The summed pooled earnings coefficients interacting with the low debt reliance or earnings management ($\phi_0 + \lambda_0$) equals 1.15, which is positive, but insignificant. Nonetheless, both summed earnings coefficients support the role of debt reliance and earnings management in decreasing the incremental sensitivity of the earnings response coefficients.

2. The mean response coefficients from Appendix G are insignificant and include signs that are different from the pooled response coefficients. Due to its insignificant coefficients, inference is only drawn from the pooled coefficients.
3. The adjusted R-squared of the returns-earnings model after incorporating debt reliance jointly with earnings management is 9.8% down from the original 9.9%. This indicate that corporate governance as measured by debt reliance combined with earnings management does not increase the relevance of earnings.
4. At earnings change (where the Wald statistic is significant), the coefficient ($\phi_9 = -3.10$, $t = -2.40$) shows a negative sign at significant level when the debt reliance and earnings management are high, which does not support the alternative hypothesis (**H4I₁: $(\lambda_0 + \lambda_9) > \beta_2$ [rejected]**), because the findings support $(\lambda_0 + \lambda_9) < \beta_2$). This can be interpreted that the market responds negatively to earnings changes when debt is high and managers have an incentive to manage earnings.

The results relating to Hypothesis Four find that when earnings management is high, value-relevance of earnings is higher for better corporate governance as reflected by high ownership concentration, absence of CEO dominance, and high audit committee

competence. Four attributes were not significant according to the Wald test. Although board size and audit committee independence show a strong impact on abnormal accruals, it is likely that shareholders perceive these two attributes differently either due to their nature or due to the importance of other significant attributes such as audit committee competence.

It could be argued some attributes are not significant, because they are defined differently by shareholders. For instance, shareholders might define board independence differently or that shareholders put a significant weight on chairman independence rather than director independence. It could also be argued that using the degree of executive directors' ownership is not as important to shareholders' perception as the degree of management ownership. This could be a factor in not finding significant results.

Even though not all corporate governance attributes support the stated hypotheses, the objective is achieved by identifying the attributes and the circumstances that answer the research question. As conditioning on earnings management increases the explanatory power of the returns-earnings model after incorporating corporate governance, the fourth hypothesis is supported. Hence, conditioning on earnings management helps clarify the impact of corporate governance attributes. Next, the study illustrated the steps taken to ensure the robustness of the results.

4.4.5 Robustness of the Results

The study has used the following checks to improve the reliability and robustness of results:

1. Outliers are removed using the same criteria used in Easton and Harris (1991).

2. All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors after detecting heteroscedasticity using the Breusch-Pagan (1979) approach.
3. The Durbin-Watson test is employed to determine whether the error terms in all regressions are autocorrelated. The error terms are shown to be virtually uncorrelated.
4. Normal probability plots for all models follow a continuous line.
5. Linearity was tested when applicable, because the linearity assumption of OLS is not met when using pooled data.
6. Two measures are used to ensure that the results were not affected by harmful collinearity among the explaining variables in all models. First, the direct correlations between corporate governance variables do not show serious collinearity. Second, condition indices (Belsley et al., 1980) were used to ensure that the sample did not contain severe harmful collinearity. Potentially severe multicollinearity is likely to exist if the maximum condition index is over 30.⁷⁸
7. The mean coefficients of annual regressions were reported in Appendix G to avoid potential overstated test statistics caused by residuals' cross-correlations (Barth et al, 2001a; Bernard, 1987).
8. A dummy variable approach plays a role in reducing the effect of measurement errors significantly. Using a dummy variable approach, as is in this study, has been effective in evaluating the effect of certain characteristics on earnings response coefficients (see Cheng et al., 1996).

⁷⁸ The highest condition index for all four years (full sample) was 23.

9. Using the modified Jones (Dechow et al., 1995) model to calculate abnormal accruals assists in accounting for industry differences.
10. The significant impact of earnings response coefficient determinants might overshadow the impact of corporate governance attributes. To correctly measure the impact of corporate governance on the returns-earnings relationship, systematic risk (beta risk) was used as a control variable.⁷⁹

These checks demonstrate that the findings are robust. Next, a summary of the chapter is presented.

4.5 SUMMARY OF THE FINDINGS

This chapter presented the results of the analysis of the data and the tests of the hypotheses. Table 4-12 summarises the results of the hypotheses tests.

⁷⁹ Growth is not added as a control variable, because the development of the earnings growth valuation model shows that growth is already incorporated in the constant variable. Thus, including growth as a control variable may bias the results rather than amend them.

Table 4-12: Summary of Hypotheses and Results

Hypothesis One: The coefficients of regressing the magnitude of abnormal accruals on the empirical indicators of corporate governance are statistically different from zero.	
H1A₀ Do not reject	H1A₁ Reject
H1B₀ Do not reject	H1B₁ Reject
H1C₀ Reject	H1C₁ Do not reject
H1D₀ Do not reject	H1D₁ Reject
H1E₀ Reject	H1E₁ Do not reject
H1F₀ Do not reject	H1F₁ Reject
H1G₀ Do not reject	H1G₁ Reject
H1H₀ Do not reject	H1H₁ Reject
H1I₀ Do not reject	H1I₁ Reject
Hypothesis Two: The interaction between the magnitude of abnormal accruals and earnings is less than the coefficient for earnings in the absence of abnormal accruals.	
H2₀ Do not reject	H2₁ Reject
Hypothesis Three: The interactions between earnings and the empirical indicators of corporate governance are different from zero and from the coefficient for earnings in the absence of corporate governance.	
H3A₀ Do not reject	H3A₁ Reject
H3B₀ Reject	H3B₁ Do not reject
H3C₀ Do not reject	H3C₁ Reject
H3D₀ Do not reject	H3D₁ Reject
H3E₀ Do not reject	H3E₁ Reject
H3F₀ Do not reject	H3F₁ Reject
H3G₀ Do not reject	H3G₁ Reject
H3H₀ Do not reject	H3H₁ Reject
H3I₀ Do not reject	H3I₁ Reject
Hypothesis Four: The coefficients for the interaction between earnings and the empirical indicators of corporate governance conditioned on the magnitude of abnormal accruals are different from zero and from the earnings response coefficient in the absence of abnormal accruals and/or corporate governance.	
H4A₀ Reject	H4A₁ Do not reject
H4B₀ Reject	H4B₁ Do not reject
H4C₀ Do not reject	H4C₁ Reject
H4D₀ Do not reject	H4D₁ Reject
H4E₀ Do not reject	H4E₁ Reject
H4F₀ Reject	H4F₁ Do not reject
H4G₀ Do not reject	H4G₁ Reject
H4H₀ Do not reject	H4H₁ Reject
H4I₀ Do not reject	H4I₁ Reject

Finally, some evidence support the core hypotheses presented in the study. The combination of earnings management and corporate governance influence the value

relevance of earnings using Australia data. The relation between corporate governance and the information content of earnings is empowered by conditioning on earnings management. Additionally, earnings management is found to be inversely associated with corporate governance. Although not all corporate governance attributes support the stated hypotheses, the study has achieved its objective by identifying the attributes that answer the research question and under which circumstances.

CHAPTER FIVE: CONCLUSIONS

5.1 INTRODUCTION

Chapter Five summarises the research and the major findings. Chapter Five presents the examination of research limitations, and discusses the implication of the study on practitioners, regulators, educators, and researchers. The chapter proceeds as follows: Section 5.2 summarises the research objectives, methods, analysis, and conclusions. Section 5.3 presents the examination of research limitations and suggests potential future research. Section 5.4 addresses the implication of the research results. Section 5.6 provides a summary of the chapter.

5.2 SUMMARY OF THE RESEARCH

The aim of this research was to theoretically and empirically investigate the links among corporate governance, earnings management and the information content of accounting earnings. The motivation for this study is derived from two research areas. The first is the suggestion that the weak returns-earnings relationship is contributed by lack of earnings reliability due management's earnings manipulation (i.e. earnings management). The second is the importance of corporate governance in enhancing financial reporting credibility and reducing opportunistic behaviour.

While most studies from the corporate governance literature focus on directly associating corporate governance with share performance, the literature lacked studies investigating associations among corporate governance, earnings management and the returns-earnings relationship. This research raises the issue that efficient corporate governance increases the credibility of financial performance, rather than directly increasing financial performance. This is supported by the mixed results found when testing the association between corporate governance and corporate performance (see Appendix A for replicated results), as well as by a recent approach to associate corporate governance to earnings management and the information content of accounting earnings. The second approach grew as results became significant and explainable. These associations are tested in this study (see sections 4.3.1 and 4.3.3). The study tests these associations using Australian data with the intention of enhancing the external validity of their findings. The current research extends prior studies by testing the impact of corporate governance on the information content of accounting earnings in the presence of earnings management (see section 4.3.4).

Using agency theory, corporate governance was used as a system that helps increase financial reporting credibility and reduces opportunistic behaviour. A review of the relevant literature identified three key categories of corporate governance: 1) organisational monitoring; 2) incentive alignment; and 3) governance structure.

Nine attributes of corporate governance were examined. Attributes of corporate governance are expected to provide a signal to the market about the firm's financial reporting credibility. However, some firms may exercise minimum level of corporate governance to ensure market governance rules are met. Consequently, the mere existence of an attribute does not necessarily mean strong financial reporting credibility. The study

uses the median of the sample as a benchmark to determine whether corporate governance is deemed influential or not.

Consistent with prior research (e.g. Kothari et al., 2001; Becker et al., 1998; Jones, 1991; Healy, 1985), the study computes abnormal accruals using aggregate accruals models as an approach to measure earnings management. Abnormal accruals were estimated using the modified Jones (Dechow et al, 1995) model.

As with prior research, the information content of accounting earnings is assessed by examining the earnings response coefficients in a returns-earnings (Easton and Harris, 1991) model. The literature examining the information content of accounting earnings identifies circumstances in which the returns-earnings relationship improves. Such as using multiple proxies for unexpected earnings and controlling for risk and growth. The basic model is share returns as the dependent variable and earning per share and change in earnings per share as the independent variables.

The study investigated the relationship with respect to earnings reliability as a value relevant source of information. The study proposes that corporate governance and earnings management are likely to influence shareholders' perception of earnings reliability. Corporate governance and earnings management were introduced to the model as interacting terms to the returns-earnings regressions. Specifically, corporate governance should play a role in explaining performance in the presence of opportunistic managerial behaviour. The study uses earnings management as a moderating construct for the corporate governance-earnings informativeness relationship.

From the model, a set of propositions was stated. The model was tested using a sample of firms consisted of the top 500 companies listed on the Australian Stock

Exchange. Sample inclusion depended on the nature of the industry and the availability of corporate governance, accounting, and market data. Firms in financial, mining and regulated industries were excluded due to different accrual choices and valuation process. The study covers the period of four financial years (1996/97, 1997/98, 1998/99, and 1999/2000).

Four hypotheses were derived from the proposition. Prior to testing hypotheses Two, Three, and Four, the returns-earnings (Easton and Harris, 1991) model is tested irrespective of the proposed indicators of reliability (i.e. earnings management and corporate governance).⁸⁰ The returns-earnings model is then tested after incorporating earnings management (Hypothesis Two), corporate governance (Hypothesis Three), or both (Hypothesis Four). These coefficients are then examined using the Wald test to find out whether the earnings response coefficients after incorporating indicators of earnings reliability are significantly different from the earnings response coefficients irrespective of any propositions. Table 5-1 provides a summary of the study's propositions, hypotheses, and key findings.

Table 5-1: Summary of propositions, hypotheses, and findings

Proposition	Hypothesis/ Reference	References/Findings
Proposition One: Corporate governance is associated with earnings management.	Hypothesis One: The coefficients of regressing the magnitude of abnormal accruals	Table 4-6 Hypothesis supported for board size and audit

⁸⁰ The response coefficients from the initial returns-earnings (Easton and Harris, 1991) model show that earnings level and change in earnings are positive ($\beta_1 = 0.91$ and $\beta_2 = 0.06$); and therefore provide incremental information content of earnings. A Ramsey RESET test ($F = 2.92$, $M = 1$, $d.f. = 773$) indicates that the response coefficients have no specification error at both levels (1% and 5%).

	on the empirical indicators of corporate governance are statistically different from zero.	committee independence.
Proposition Two: Earnings management is negatively associated with the information content of earnings.	Hypothesis Two: The interaction between the magnitude of abnormal accruals and earnings is less than the coefficient for earnings in the absence of abnormal accruals.	Table 4-7 Hypothesis not supported.
Proposition Three: Corporate governance is associated with the information content of earnings.	Hypothesis Three: The interactions between earnings and the empirical indicators of corporate governance are different from zero and from the coefficient for earnings in the absence of corporate governance.	Tables 4-8 and 4-9 Hypothesis supported for CEO dominance.
Proposition Four: Managers' incentive to manage earnings moderates the association between corporate governance and the information content of earnings.	Hypothesis Four: The coefficients for the interaction between earnings and the empirical indicators of corporate governance conditioned on the magnitude of abnormal accruals are different from zero and from the earnings response coefficient in the absence of abnormal accruals and/or corporate governance.	Table 4-10 and 4-11 Hypothesis supported for ownership concentration, CEO dominance, and audit committee competence.

The results from testing Hypothesis One show that board size and audit committee independence are negatively associated with the magnitude of abnormal accruals. This is consistent with the findings of Xie et al. (2003) and Chtourou et al. (2001) for board size and consistent with the findings of Klein (2002b) for audit committee independence.

Hypothesis Two is tested by incorporating the magnitude of abnormal accruals in the returns-earnings (Easton and Harris, 1991) model as a variable directly influencing the earnings response coefficient rather than share returns. Hypothesis Two is not supported.

The Wald test for Hypothesis Three shows that the earnings response coefficients are significantly different after incorporating CEO dominance and independent directors' ownership. The coefficients associated with CEO dominance ($\phi_2 = -3.93$, $t = -3.21$, $\phi_0 =$

1.67, $t = 8.05$) show that the market responds negatively to earnings level when the CEO is dominant. The adjusted R-squared of the returns-earnings model after incorporating CEO dominance is 16% up from the original 9.9%, which indicates that CEO dominance is a source of value relevant information. This is consistent with the findings of Anderson et al. (2003) and Finkelstein and D'Aveni (1994).

However, the coefficient for independent directors' ownership ($\phi_7 = -2.20$, $t = -5.44$) suggests that the market responds negatively to earnings change when the equity stakes of independent directors' in the firm are high. This is contrary to the views of regulators (Hampel, 1997) and the findings of prior studies (Bhagat and Black, 1999; Bhagat et al., 1999). Hence, it supports an alternative view that high independent directors' ownership motivates directors to act in their own interests rather than the interests of shareholders.

Through the inclusion of a dummy variable representing abnormal accruals to the previous test, Hypothesis Four is tested. The impact of corporate governance on the information content of accounting earnings is tested after conditioning on earnings management. The multivariate pooled and mean adjusted R-squared increases (pooled = 22% and mean = 36.8%), which suggests that the overall explanatory power of earnings improves due to combining the empirical indicators of corporate governance and earnings management. The Wald test for Hypothesis Four shows an increase in the number of significant corporate governance variables when earnings management is present. This suggests that the empirical indicator of earnings management plays a decisive role in explaining the relationship between corporate governance and the information content of accounting earnings. Thus, Hypothesis Four is supported.

Although not all corporate governance attributes reject the null hypothesis, the objective of the study is achieved by finding which of the attributes answers the research

question and under which circumstances. The results of Hutchinson and Gul (2004) suggest that not all corporate governance attributes are appropriate for all firms. Corporate governance attributes are used selectively as control devices depending on a firm's characteristics.

The robustness of the results was checked. Earnings response coefficients determinants were taken into account. Steps were taken to check for harmful collinearity and any violation of the regression assumptions. Violations of the regression assumptions were remedied using recommended approaches from the literature.

5.3 LIMITATIONS OF THE RESEARCH

There are a number of potential limitations of this research, which the reader must be mindful when interpreting the findings. These limitations relate primarily to threats to the validity of the research. The threats to validity are categorised into two groups: internal and external validity (Campbell and Stanley, 1963). Due to the nature of the constructs and the research method, there is a greater emphasis on internal validity than external validity.⁸¹

5.3.1 Internal Validity

Internal validity relates to the certainty with which conclusions can be made about the relationship between the variables as measured in the research. As the study is not an experiment, many of the traditional threats to internal validity are not present. Internal validity of this research is enhanced by the following controls:

- External independent auditors examine figures in financial reports, which controls the legitimacy of information obtained.

⁸¹ Although Cook and Campbell (1979) classify threats to validity to include threats to statistical conclusion and construct validity, these threats are included as internal validity issues.

- ASX disclosure requirements ensure that financial reports are complete, which controls for missing data.
- ASX listing rules apply to all firms listed without exceptions, which controls for unstandardised reporting.

The threats to internal validity are categorised into four issues. They are: sample, data, industries, and constructs & variables.

5.3.1.1 Sample

A challenge to internal validity is created by the selection of the sample on predetermined criteria. Examining a non-random sample of firms introduces an inherent bias into the study. Given the non-random nature of the sample, the detection of false associations arising from the sample design cannot be prevented.

It is nearly impossible in Australian studies of earnings management or corporate governance to select firms randomly. This is due to the limited number of firms that publicly disclose standardised business information.

Sample size is another concern in terms of statistical conclusion validity, which relates to the probability that the statistical results are representative of the actual relationship within the data set. The sample is also limited to the top 500 companies, thus introducing a size bias. However, the size bias is likely to reduce survivorship bias over the study period, because larger firms are less likely to be delisted than smaller firms.

5.3.1.2 Data

Data availability dictates that sample firms are only drawn from the top 500 companies listed on ASX. It is possible that firms with poor corporate governance are managing earnings to conceal recent poor performance, which leads to these firms' market capitalisation to fall outside the top 500 listed companies. In contrast, other firms

may have an incentive to manage earnings in an attempt to maintain rank. The exclusion of these firms may remove the very firms that are likely to answer the research question. Given the size of the final sample compared to the initial target, selection bias caused by the availability of annual reports or clarity of disclosed data should not threaten the results of the study.

The model will be tested using archival data that contains the effects of all influences, not just the release of the accounting information. Therefore, isolating the impact of accounting information on investor behaviour may prove difficult.

5.3.1.3 Industries

This research relies on the ASX industry sub-group classification in calculating normal and abnormal accruals. The model may be misspecified if the ASX industry classification is inappropriately set, which results in reducing control over industry specific factors.

When a study is conducted across industries, industry specific variables may be driving the results. While a single industry approach would have enhanced the internal validity of the study, it would have been to the disadvantage of external validity. If a selected sample contains various industries, external validity is promoted but the power of the tests are reduced, as it increases the risk of including firms and industries in the sample that consider corporate governance practices irrelevant.

5.3.1.4 Constructs and Variables

Construct validity relates to the degree to which an operational variable measures the theoretical construct. Studying natural behaviours in natural settings can contribute to construct validity because uninterrupted observed behaviours (such as discretionary judgement over accruals) are likely to reflect the desired construct (opportunistic earnings

management) to a greater extent than other research methods, which might be more subject to response biases (Judd et al., 1991).

The proposed indicators of earnings reliability (i.e. corporate governance and earnings management) may have some limitations. Whilst their use can be theoretically justified, neither construct can be accurately measured empirically. These limitations are minimised through the clear operational definitions of the used measures, which is provided in Chapter Three.

Construct validity is important when variables are newly developed, as is the case with audit committee competence. Returns, earnings, and abnormal accruals, and governance attributes (except for audit committee competence) have been used extensively in previous research. The existing literature was reviewed to provide guidance for the development of a measure for audit committee competence.

There are no major conceptualisation differences between setters of financial reports and the data collector of this research. This study made certain that the operational measures used for the independent variables were consistent with measures used in the literature. In certain cases, the corporate governance literature identifies more than one operational measure. However, a single operationalisation was sometimes necessary to avoid nesting problems and to reduce the number of sample firms required.

The examination of a limited set of corporate governance attributes is a limitation that needs to be taken into account when interpreting the findings. If other corporate governance characteristics contribute to the integrity of the accounting measures then the parameter estimates may be biased. An opportunity arises for further research by investigating other attributes of corporate governance.

A limitation of the study is that there are other factors that may influence earnings reliability apart from earnings management and corporate governance. Also there are other factors are likely to influence abnormal returns over the 12 months window, such as company disclosure policies, impact of non-financial announcements, and frequent company announcements.

The literature indicates a high level of measurement error in the accrual models commonly used to detect earnings management. One of the limitations is that earnings management are assumed to be opportunistic rather than informative. Discretionary accruals may reflect either opportunistic behaviour or managerial discretion in providing information that is more relevant. Currently, no clear method exists by which to make this distinction.

The methods used to analyse relationships between variables capture associations only in a statistical sense. Causation cannot be inferred, because it is not feasible due to the historical focus of the study.

It is unclear whether investors use abnormal accruals, as measured by aggregate accruals approach, as a representation of earnings management. The complexity of such models suggests that the average investor is unlikely to use this measure. An opportunity arises for further research in the development of an experiment that would identify how average investors measure earnings management.

One of the steps taken to minimise the general threats to internal validity is through controlling for earnings response coefficient determinants. These determinants were included to reduce biasness from testing a cross-sectional regression model.

5.3.2 External Validity

External validity relates to the certainty to which the results of the research can be generalised to the population and to other settings and conditions. The sample selection procedure reduces the study's external validity, because the representativeness of the sample dictates the degree of generalisability. Although the initial sample selection of firms is based on data availability, random sampling was not used as it would have further reduced an already small sample size. It is also difficult to generalise the results of the investigated sample in this study to the population of smaller firms.

Results can be generalised subject to no significant changes occurring to corporate governance practices in Australia. Testing in accordance with real-world settings without intervening with any observations ensures the generalisation of the findings.

Due to using Australian data, care should be taken in generalising the results to share markets in other countries due different regulations, practices, and economic factors. The Australian capital market differs from international markets in terms of size, number of listed firms or market valuation. However, the similarity in the results of the study with past international research indicates a degree of generalisability.

Furthermore the exclusion of firms, whether it is due to the nature of the industry, the size of the industry or the rank of the firm, reduces the generalisability of the results to all publicly traded firms. An opportunity arises for further research into the impact of corporate governance in regulated or financial industries or smaller companies. Different attributes of corporate governance could also be investigated.

5.4 IMPLICATIONS OF THE RESEARCH

Despite its potential limitation, this study clearly contributes to the current literature on the role of corporate governance and earnings management in improving the returns-earnings relationship. One of the tests in the study addresses the impact of corporate governance attributes on the information content of accounting earnings in the presence earnings management. It documents evidence that corporate governance help improve the explanatory power of earnings and that earnings management should be controlled for when measuring the impact of corporate governance on the information content of accounting earnings.

Although the current study is not the first to examine the impact of corporate governance on earnings management and on the information content of accounting earnings, the approach differs from previous efforts in the following ways:

1. The study theoretically and empirically investigated the collective interaction among corporate governance, earnings management, and the information content of accounting earnings.
2. When testing the association between corporate governance and the information content of earnings, the relationship is conditioned on earnings management.
3. While most, if not all, previous research in the corporate governance literature used a signal proxy to represent unexpected earnings, a multiple proxy for unexpected earnings is used in this study.
4. While most relevant studies focus on whether coefficients are significantly different from zero, the study, among other tests, investigates whether earnings response coefficients after introducing earnings reliability indicators are

significantly different from the original returns-earnings coefficients before incorporating any interaction variables.

5. The study focuses on a study period when managers in Australia had an incentive to managing earnings due to the effect of the Asian currency crisis.
6. The study adopts recent classifications and definitions adopted by recent regulatory developments (e.g. Sarbanes-Oxley act of 2002).
7. Unlike most corporate governance studies, this study focuses on the control aspect of corporate governance rather than the performance enhancing aspect.

Further, this is one of the few studies investigating the role of corporate governance in improving the returns-earnings relationship within the Australian context, if not the only, that identifies, explores, and tests several major attributes of corporate governance. The findings show that investors do not ignore corporate governance when examining the information content of accounting earnings.

Given that corporate governance and earnings management affect the information content of earnings through their impact on shareholders' perception of the integrity of the financial reporting process, the findings of this study should have implications on investors, accounting standard setters, auditors, financial analysts, and capital market regulators. Further, this study has implications on corporate governance practices due to the impact of corporate governance on managerial opportunistic behaviour as well as financial reporting credibility.

5.4.1 Practical Implications

Corporate decision makers need to satisfy shareholders and attract potential investors. Measuring the impact of corporate governance allows decision makers to evaluate the role of corporate governance in enhancing shareholders' perception of the

reliability of financial reports. Once shareholders are able to obtain reliable information about corporate performance, their response to financial performance measures becomes greater.

The results from this study will unlock a new door for investors to improve their decision-making process. Measuring the different aspects of corporate governance allows investors to be mindful of management's capacity to alter accounting earnings for opportunistic purposes, which helps investors in evaluating the reliability and value-relevance of accounting earnings.

The results of the study provide market participants with guidance in knowing which factors to take into account when evaluating firms' financial reports. The results demonstrate that corporate governance affects earnings management and the information content of accounting earnings. The results also show that corporate governance affects the information content of earnings in the presence of earnings management. Thus, a firm's corporate governance structure and its earnings management practices are value-relevant information that should be considered by equity market participants in the valuation process.

5.4.2 Regulatory Implications

Authorities involved in regulating corporate governance can use this study as empirical support to the development of regulations and recommendations. Stock exchanges (eg. ASX) can employ this study to evaluate the current disclosure requirement of corporate governance practices.

For example, Australian corporate regulators do not currently oblige listed firms to have independent boards and board committees, but the results suggest that mandatory formation could improve financial reporting credibility. While regulatory bodies (eg.

ASX and ASIC) have a vested interest in monitoring the financial reporting process, legislation has also acknowledged the need to monitor financial reporting to protect market participants (Sarbanes-Oxley Act 2002).

The results of the research provide evidence to support ongoing regulatory activities aimed at effectively monitoring financial reporting and improving corporate governance practices. Additionally the findings of the study will assist in the identification of which attributes of corporate governance are likely to impact on market's response to the content of the financial reports.

New corporate governance regulations and revisions of existing corporate governance rules would be based on evidence from empirical studies rather than politically motivated debates. Empirically supporting the importance of corporate governance's role would prove that the benefits of imposing governance regulations on firms outweigh the costs; and provide regulators with sufficient justification to impose additional corporate governance requirements.

Furthermore, any move to harmonise corporate governance practices around the globe requires evidence that corporate governance systems are effective. This study provides evidence of the role corporate governance plays in enhancing the reliability of value relevant information (i.e. accounting earnings).

5.4.3 Educational Implications

Recent corporate collapses have led to the rise of corporate governance as a necessary factor in courses that aim to evaluate financial statements. The potential lack of credibility of accounting information acknowledges the need to understand managerial opportunistic behaviour and the means to monitor and control such behaviour.

Financial statement analysis textbooks address the issue of earnings management practices and the incentives of such practices. However, few texts address the issue of how to detect earnings management practices. Furthermore, no credit is given to the role corporate governance plays in monitoring and reducing such practices, which sequentially enhances the credibility of accounting information.

Financial statement analysis courses largely focus on unscrambling the ambiguity of firm valuations. The study provides further evidence of the role of corporate governance and earnings management in explaining the link between accounting information and markets' response. Furthermore, the results demonstrate the link between corporate governance and earnings management that tends to assist in explaining their impact of the returns-earnings relationship.

Educators of corporate governance will have a clearer understanding of the role corporate governance plays in capital markets. The model will also assist classroom discussions on the different aspects of corporate governance and the analysis of case studies. For instance, educators could encourage the classroom to evaluate corporate governance practiced for different firms and match their results with the level of abnormal accruals and the earnings response coefficients, as part of their empirical research project.

5.4.4 Research Implications

A key issue that deserves attention from researchers is the development of a link among share returns, reported earnings, earnings management, and corporate governance. Corporate governance and earnings management were used as indicators of the reliability of financial information, specifically reported earnings.

A small number of studies examined the impact of corporate governance on the value relevance of accounting earnings. Unlike these studies, the study investigates the impact of corporate governance on the value relevance of earnings under distinctive conditions of earnings management. The results clearly demonstrate the potential of earnings management in clarifying the role of corporate governance attributes in improving the returns-earnings relationship.

Significant results should help sway the focus of corporate governance literature from corporate performance to corporate credibility. The results highlight the importance of corporate governance in influencing shareholders' perception of reported earnings.

Results from the study also contribute to the literature in the following ways:

1. This study extends the earnings management literature by examining the relationship between corporate governance and the information content of accounting earnings only when managers have an incentive to manage earnings. Using managers' incentives to manage earnings is important to the theory in that the impact of corporate governance becomes essential only when management's interest deviates from the interest of shareholders.
2. The results would support the view from the literature that abnormal accruals are better measures of earnings management.
3. The major contribution to the earnings response coefficient research is to show that corporate governance and earnings management are important determinants of earnings response coefficient.
4. Classifications adopted by recent regulatory developments (e.g. Sarbanes-Oxley act of 2002) are empirically tested in the proposed model (i.e. director independence, financial expertise).

The similarity of the results with previous research using US data demonstrates the generalisability of the findings to international markets. Replication of the research using data from other international stock exchanges is likely to provide insight into market response to corporate governance and earnings management. It would also be of great interest for future research to address the issue of executives' motive behind adopting corporate governance, whether to increase perceived credibility or to satisfy shareholders and regulators.

5.5 SUMMARY

The chapter presented a summary of the research. It discussed the motivations and objectives of the research, how those objectives were reached, and the findings of the research. The limitations of the research were then presented. The chapter concluded by discussing the major contribution of the research and the implications of the research for practitioners, regulators, educators and researchers.

The links described in the study primarily examine the impact of corporate governance attributes on the information content of accounting earnings conditioned on earnings management. The study proposes and finds that earnings management and corporate governance collectively improve the relations between share returns and unexpected earnings by providing information to investors that helps define their perception of the reliability of earnings. The model is immediately useable by market participants in their evaluation of corporate governance and the effectiveness in enhancing earnings reliability. The model will also assist regulators in requiring more disclosure of corporate governance practices, and will help educators to develop students' understanding of corporate governance attributes.

The primary contributions to knowledge of the research are in its extensions of the literature on the value relevance of corporate governance. It helps earnings informativeness researchers to be mindful of the corporate environment when analysing their results, as suggested by Hutchinson and Gul (2004).

In evaluating the results of this study, several limitations should be noted. Although certain empirical indicators of corporate governance were not found to be significant, the study managed to determine which attributes and circumstances would enhance the role of corporate governance. The difference in the results, from prior studies, is likely to be due to the different time periods or due to the use of Australian rather than US data.

Finally it is worth noting that an implication of the results of this study is that ASX should perhaps, after gathering more empirical evidence, consider formally incorporating certain corporate governance practices in the listing rules to improve the credibility of financial reporting.

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APPENDIX (A) CORPORATE GOVERNANCE AND CORPORATE PERFORMANCE

The results from Table A display the univariate and multivariate impact of corporate governance, respectively.

Table A: Corporate governance and corporate performance.

Does corporate governance influence corporate performance?				
	Pooled (univariate)	Pooled (multivariate)	Mean (univariate)	Mean (multivariate)
Ownership Concentration	-0.08 (-0.84)	-0.04 (-0.49)	-0.14 (-0.90)	-0.49 (-2.00)*
CEO dominance	0.09 (0.75)	0.05 (0.42)	-0.30 (-0.89)	0.19 (1.34)
Board Size	-0.03 (-2.76)***	-0.03 (-2.58)***	-0.30 (-2.75)**	-0.52 (-3.54)**
Board Independence	-0.23 (-1.39)	-0.18 (-0.68)	-0.42 (-1.94)*	-0.08 (-0.30)
Audit Committee Independence	-0.01 (-0.05)	0.17 (1.39)	0.09 (0.43)	-0.08 (-0.27)
Audit Committee Competence	-0.04 (-0.22)	-0.03 (-0.22)	-0.03 (-0.16)	0.27 (0.98)
Independent Directors' Ownership	-0.11 (-1.31)	-0.13 (-1.50)	-0.22 (-1.34)	-0.58 (-3.30)**
Managerial Ownership	-0.02 (-5.50)***	-0.03 (-10.57)***	1.56 (1.22)	0.18 (0.60)
Debt Reliance	-0.58 (-1.72)*	-0.57 (-1.80)**	-1.00 (-5.13)***	-0.80 (-2.94)**

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Pooled represents the pooled GLS (random effect) regression.

Mean represents the mean of the four yearly coefficients, and the t-statistic of the mean is obtained by dividing the mean by its standard error. Significance level at three degrees of freedom are 4.451 (0.01 level), 2.353 (0.05 level), and 1.638 (0.10 level).

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk.

By analysing the adjusted R-squared (Pooled 2% and Mean 4%), it seems that corporate governance has a higher role than simply and directly enhancing share performance. Compared to the findings in section 4.3, corporate governance is more

related to earnings as an indicator of reliability than being a device to directly increase share performance.

Only three corporate governance variables are negatively associated with share returns at significant levels. The pooled coefficients of board size, managerial ownership and debt reliance are significant greater than zero, univariately and multivariately. The some of the results are supported by prior studies.

1. Board size

Zahra and Pearce (1989) and Jensen (1993) argue that large boards are less likely to function effectively. Empirical results in Yermack (1996) and Eisenberg et al. (1998) support the notion that firm performance is enhanced by smaller boards. Yermack (1996) and Eisenberg et al. (1998) report a negative relationship between board size and firm value.

2. Managerial ownership

Given that the empirical literature finds a positive association between firm value and managerial ownership (e.g. Agrawal and Knoeber, 1996; Yermack, 1996; Mehran, 1995), the findings relating to share performance are supportive of the entrenchment effect literature rather than the alignment effect literature.

3. Debt reliance

The significant negative impact of debt reliance is explained by Hitt and Smart's (1992) findings that high leverage is often a major source of reductions in performance. Hence, the results relating to share performance display debt reliance not as a monitoring device, but rather as an indicator of financial risk.

APPENDIX (B) EXTREME EARNINGS MANAGEMENT vs. NO EARNINGS MANAGEMENT

Focusing on extreme earnings management is conducted by creating a sub-sample. Earnings management is incorporated into the models by classifying firms into quartiles based on its magnitude of abnormal accruals. Firms in the top quartile are considered to have engaged in extreme earnings management. Firms in the bottom quartile are considered to have not employed earnings management.

The approach is expected to empower the strength of hypotheses testings, because it removes the confounding effect of the middle two quartiles. However, the results should be noted with caution because chances of harmful collinearity are high in this sub-sample (condition index is above 30).

Table B-1: The regression of extreme abnormal accruals on empirical indicators of corporate governance

Does corporate governance influence extreme earnings management?				
	Pooled (univariate)	Pooled (multivariate)	Mean (univariate)	Mean (multivariate)
Ownership Concentration	0.18 (0.62)	-0.01 (-0.07)	0.15 (1.33)	-0.39 (-2.81)**
CEO dominance	0.04 (0.82)	-0.22 (-1.55)	0.13 (0.93)	-0.07 (-0.57)
Board Size	-0.05 (-1.80)*	-0.04 (-1.73)*	-0.14 (-3.17)**	-0.08 (-3.13)**
Board Independence	-0.83 (-1.24)	-1.04 (-1.13)	-0.74 (-1.17)	-0.52 (-0.67)
Audit Committee Independence	-0.42 (-1.55)	-0.26 (-3.84)***	-0.49 (-1.44)	-0.26 (-2.57)**
Audit Committee Competence	-0.16 (-1.34)	0.07 (2.81)***	0.31 (-1.24)	0.26 (1.04)
Independent Directors' Ownership	-0.000 (-0.80)	0.08 (1.02)	0.06 (0.23)	-0.16 (-0.74)
Managerial Ownership	-0.001 (-0.71)	-0.40 (-1.02)	0.11 (2.91)**	-0.08 (-0.18)
Debt Reliance	0.37 (0.91)	0.61 (1.09)	0.32 (1.04)	0.49 (1.22)

Table B-2: The results of regressing earnings response coefficient on extreme abnormal accruals.

Does extreme earnings management influence the informativeness of earnings?				
	E_{it}	$EAAA_{it}$	ΔE_{it}	$\Delta EAAA_{it}$
Pooled	0.93 (1.11)	-1.14 (-3.1)***	-0.08 (-0.12)	0.21 (4.64)***
Wald	1.16		0.01	

Table B-3: The results of regressing earnings response coefficient on the empirical indicators of corporate governance conditioned on the magnitude of extreme abnormal accruals

Does corporate governance influence earnings informativeness in the presence of extreme earnings management?					
		Pooled (univariate)	Pooled (multivariate)	Mean (multivariate)	Wald Stat.
Ownership Concentration	E	2.50 (1.51)	1.19 (2.25)**	1.89 (0.95)	0.21
	ΔE	-0.60 (-0.40)	0.39 (0.35)	-1.28 (-1.86)*	0.02
CEO dominance	E	-5.30 (-2.59)***	-6.58 (-2.64)***	-2.79 (-2.15)*	4.91**
	ΔE	1.43 (1.67)*	1.74 (1.22)	3.58 (1.52)	0.59
Board Size	E	0.23 (2.78)***	0.16 (2.23)**	0.07 (0.91)	1.45
	ΔE	-0.10 (-1.38)	0.02 (0.30)	-0.09 (-0.25)	0
Board Independence	E	-1.78 (-1.27)	-1.45 (-1.36)	1.96 (1.03)	0.88
	ΔE	-0.33 (-0.39)	-0.06 (-0.11)	-3.54 (-3.19)**	0.06
Audit Committee Independence	E	0.74 (0.94)	-3.63 (-1.82)*	-2.18 (-1.76)*	0.1
	ΔE	0.62 (0.65)	1.67 (0.68)	0.97 (0.25)	0
Audit Committee Competence	E	1.49 (2.82)***	2.86 (2.15)**	1.08 (0.89)	0.56
	ΔE	-0.80 (-3.07)***	-1.78 (-3.26)***	3.00 (0.87)	1.23
Independent Directors' Ownership	E	-0.32 (-1.92)*	-1.99 (-1.57)	-1.20 (-0.50)	0.58
	ΔE	-1.34 (-1.94)**	-1.07 (-0.25)	17.03 (0.51)	1.5
Managerial Ownership	E	0.43 (1.05)	7.71 (4.62)***	6.58 (1.34)	0.01
	ΔE	1.77 (0.92)	-2.99 (-4.33)***	-4.19 (0.81)	0.43
Debt Reliance	E	0.23 (0.16)	0.24 (0.31)	-0.29 (-0.06)	0.002
	ΔE	-0.52 (-0.37)	-1.79 (-0.86)	-5.26 (-0.88)	0.14

APPENDIX (C) EXCLUDED ATTRIBUTES

The model excludes some corporate governance attributes that may reflect earnings reliability. These attributes are excluded due to poor definition or lack of consistent empirical evidence on their effects. They are:

1. Board Dynamics (or Activities)

The model includes no attributes relating to board dynamics or activities of board committees. After reviewing the literature, Johnson et al. (1996) and Zahra and Pearce (1989) argue that evidence, from the literature, relating to the impact of board activities is sporadic and inconclusive. For example, Forbes and Milliken (1999) demonstrate the complexity of board dynamics by showing how a single aspect of board demography can have multiple and contrasting effects on different mediating constructs. Thus, even if these attributes may reflect earnings reliability, poor definition, attribute complexity, and lack of empirical evidence prevent their inclusion.

2. Disclosure Quality of Corporate Governance

Disclosure quality of corporate governance practices is not included. The exclusion is related to the fact the disclosure for corporate governance does not necessarily vary across firms, because the ASX listing rules require a standard level of corporate governance disclosure (Asian Business Review, 1996). Thus, it is not possible to measure a non-varying attribute.

3. Shareholders' Activism

The model excludes shareholder activism due to three reasons. First, shareholder activism is measured, in the literature, by focusing largely on shareholder proposals or resolutions (e.g. Smith, 1996). Such measures cannot be effective, because most

proposals can be ignored by management. Second, there is lack of empirical evidence signifying the impact of shareholder activism. For instance, Karpoff (1998) and Romano (2001) surveyed the existing evidence on shareholder activism and found no evidence relating shareholder activism to firm value. Third, the potential impact of shareholder activism is captured by ownership concentration (included in the model), because Shleifer and Vishny (1986) argue that the presence of large outside shareholders increases the likelihood that firms are a target for shareholder activism. Hence, including shareholders' activism may create nesting problems.

4. Tenure of Outside Directors

Tenure of outside directors is not included due to the lack of empirical evidence supporting its inclusion. In addition, outside directors' independence and financial expertise are more relevant to addressing the research question than directors' tenure.

5. Compensation Plans

Compensation plans are not included in the model to avoid nesting problems. This is because setting compensation plans for executive management is part of the board's duties. Thus, compensation plans are directly influenced by attributes relating to the board.

6. External Auditor

Independence of external auditors is not included in the model or controlled for. First, the traditional audit quality measure, which is based on big-five versus non-big five, is no longer a helpful measure in the wake of the Enron bankruptcy and the troubled Arthur Andersen. Second, the limited number of top 500 companies using the

services of non-big five auditing firms prevents from establishing a valid statistical relationship.⁸²

⁸² In 1999, less than 20% of the top 500 companies were audited by non-big five auditing firms.

APPENDIX (D) THE DEVELOPMENT OF EQUATIONS FIVE AND SIX

The original returns-earnings regression by Easton and Harris (1991) is:

$$AR_j = \beta_0 + \beta_1 E_j + \beta_2 \Delta E_j + v_j$$

If β_1 and β_2 are functions of corporate governance attributes, then

$$\beta_1 = \varphi_0 + \varphi_1 D_1 \text{OWNCON}_{jt} + \varphi_2 \text{CEO}_{jt} + \varphi_3 D_2 \text{BRDSZE}_{jt} + \varphi_4 D_3 \text{BRDIND}_{jt} + \varphi_5 \text{AUDIND}_{jt} + \varphi_6 D_4 \text{AUDCMP}_{jt} + \varphi_7 D_5 \text{OWNOUT}_{jt} + \varphi_8 D_6 \text{OWNMAN}_{jt} + \varphi_9 D_7 \text{DEBTRL}_{jt}$$

$$\beta_2 = \lambda_0 + \lambda_1 D_1 \text{OWNCON}_{jt} + \lambda_2 \text{CEO}_{jt} + \lambda_3 D_2 \text{BRDSZE}_{jt} + \lambda_4 D_3 \text{BRDIND}_{jt} + \lambda_5 \text{AUDIND}_{jt} + \lambda_6 D_4 \text{AUDCMP}_{jt} + \lambda_7 D_5 \text{OWNOUT}_{jt} + \lambda_8 D_6 \text{OWNMAN}_{jt} + \lambda_9 D_7 \text{DEBTRL}_{jt}$$

By replacing β_1 and β_2 in the first equation with the above values, the equation becomes:

$$AR_j = \beta_0 + (\varphi_0 + \varphi_1 D_1 \text{OWNCON}_{jt} + \varphi_2 \text{CEO}_{jt} + \varphi_3 D_2 \text{BRDSZE}_{jt} + \varphi_4 D_3 \text{BRDIND}_{jt} + \varphi_5 \text{AUDIND}_{jt} + \varphi_6 D_4 \text{AUDCMP}_{jt} + \varphi_7 D_5 \text{OWNOUT}_{jt} + \varphi_8 D_6 \text{OWNMAN}_{jt} + \varphi_9 D_7 \text{DEBTRL}_{jt}) E_j + (\lambda_0 + \lambda_1 D_1 \text{OWNCON}_{jt} + \lambda_2 \text{CEO}_{jt} + \lambda_3 D_2 \text{BRDSZE}_{jt} + \lambda_4 D_3 \text{BRDIND}_{jt} + \lambda_5 \text{AUDIND}_{jt} + \lambda_6 D_4 \text{AUDCMP}_{jt} + \lambda_7 D_5 \text{OWNOUT}_{jt} + \lambda_8 D_6 \text{OWNMAN}_{jt} + \lambda_9 D_7 \text{DEBTRL}_{jt}) \Delta E_j + v_j$$

By multiplying earnings and change in earnings with every coefficient, the result becomes:

(Equation Five)

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi_1 E_{jt} D_1 \text{OWNCON}_{jt} + \varphi_2 E_{jt} \text{CEO}_{jt} + \varphi_3 E_{jt} D_2 \text{BRDSZE}_{jt} + \varphi_4 E_{jt} D_3 \text{BRDIND}_{jt} + \varphi_5 E_{jt} \text{AUDIND}_{jt} + \varphi_6 E_{jt} D_4 \text{AUDCMP}_{jt} + \varphi_7 E_{jt} D_5 \text{OWNOUT}_{jt} + \varphi_8 E_{jt} D_6 \text{OWNMAN}_{jt} + \varphi_9 E_{jt} D_7 \text{DEBTRL}_{jt} + \lambda_0 \Delta E_{jt} + \lambda_1 \Delta E_{jt} D_1 \text{OWNCON}_{jt} + \lambda_2 \Delta E_{jt} \text{CEO}_{jt} + \lambda_3 \Delta E_{jt} D_2 \text{BRDSZE}_{jt} + \lambda_4 \Delta E_{jt} D_3 \text{BRDIND}_{jt} + \lambda_5 \Delta E_{jt} \text{AUDIND}_{jt} + \lambda_6 \Delta E_{jt} D_4 \text{AUDCMP}_{jt} + \lambda_7 \Delta E_{jt} D_5 \text{OWNOUT}_{jt} + \lambda_8 \Delta E_{jt} D_6 \text{OWNMAN}_{jt} + \lambda_9 \Delta E_{jt} D_7 \text{DEBTRL}_{jt} + \varepsilon_j$$

However, if β_1 and β_2 are functions of corporate governance attributes conditioned on earnings management, then

$$\beta_1 = \varphi_0 + \varphi_1 D_0 D_1 \text{OWNCON}_{jt} + \varphi_2 D_0 \text{CEO}_{jt} + \varphi_3 D_0 D_2 \text{BRDSZE}_{jt} + \varphi_4 D_0 D_3 \text{BRDIND}_{jt} + \varphi_5 D_0 \text{AUDIND}_{jt} + \varphi_6 D_0 D_4 \text{AUDCMP}_{jt} + \varphi_7 D_0 D_5 \text{OWNOUT}_{jt} + \varphi_8 D_0 D_6 \text{OWNMAN}_{jt} + \varphi_9 D_0 D_7 \text{DEBTRL}_{jt}$$

$$\beta_2 = \lambda_0 + \lambda_1 D_0 D_1 \text{OWNCON}_{jt} + \lambda_2 D_0 \text{CEO}_{jt} + \lambda_3 D_0 D_2 \text{BRDSZE}_{jt} + \lambda_4 D_0 D_3 \text{BRDIND}_{jt} + \lambda_5 D_0 \text{AUDIND}_{jt} + \lambda_6 D_0 D_4 \text{AUDCMP}_{jt} + \lambda_7 D_0 D_5 \text{OWNOUT}_{jt} + \lambda_8 D_0 D_6 \text{OWNMAN}_{jt} + \lambda_9 D_0 D_7 \text{DEBTRL}_{jt}$$

By replacing β_1 and β_2 in the first equation with the above values, the equation becomes:

$$AR_j = \beta_0 + (\varphi_0 + \varphi_1 D_0 D_1 OWNCON_{jt} + \varphi_2 D_0 CEO_{jt} + \varphi_3 D_0 D_2 BRDSZE_{jt} + \varphi_4 D_0 D_3 BRDIND_{jt} + \varphi_5 D_0 AUDIND_{jt} + \varphi_6 D_0 D_4 AUDCMP_{jt} + \varphi_7 D_0 D_5 OWNOUT_{jt} + \varphi_8 D_0 D_6 OWNMAN_{jt} + \varphi_9 D_0 D_7 DEBTRL_{jt}) E_j + (\lambda_0 + \lambda_1 D_0 D_1 OWNCON_{jt} + \lambda_2 D_0 CEO_{jt} + \lambda_3 D_0 D_2 BRDSZE_{jt} + \lambda_4 D_0 D_3 BRDIND_{jt} + \lambda_5 D_0 AUDIND_{jt} + \lambda_6 D_0 D_4 AUDCMP_{jt} + \lambda_7 D_0 D_5 OWNOUT_{jt} + \lambda_8 D_0 D_6 OWNMAN_{jt} + \lambda_9 D_0 D_7 DEBTRL_{jt}) \Delta E_j + \nu_j$$

By multiplying earnings and change in earnings with every coefficient, the result becomes:

(Equation Six)

$$AR_j = \beta_0 + \varphi_0 E_{jt} + \varphi_1 E_{jt} D_0 D_1 OWNCON_{jt} + \varphi_2 E_{jt} D_0 CEO_{jt} + \varphi_3 E_{jt} D_0 D_2 BRDSZE_{jt} + \varphi_4 E_{jt} D_0 D_3 BRDIND_{jt} + \varphi_5 E_{jt} D_0 AUDIND_{jt} + \varphi_6 E_{jt} D_0 D_4 AUDCMP_{jt} + \varphi_7 E_{jt} D_0 D_5 OWNOUT_{jt} + \varphi_8 E_{jt} D_0 D_6 OWNMAN_{jt} + \varphi_9 E_{jt} D_0 D_7 DEBTRL_{jt} + \lambda_0 \Delta E_{jt} + \lambda_1 \Delta E_{jt} D_0 D_1 OWNCON_{jt} + \lambda_2 \Delta E_{jt} D_0 CEO_{jt} + \lambda_3 \Delta E_{jt} D_0 D_2 BRDSZE_{jt} + \lambda_4 \Delta E_{jt} D_0 D_3 BRDIND_{jt} + \lambda_5 \Delta E_{jt} D_0 AUDIND_{jt} + \lambda_6 \Delta E_{jt} D_0 D_4 AUDCMP_{jt} + \lambda_7 \Delta E_{jt} D_0 D_5 OWNOUT_{jt} + \lambda_8 \Delta E_{jt} D_0 D_6 OWNMAN_{jt} + \lambda_9 \Delta E_{jt} D_0 D_7 DEBTRL_{jt} + \varepsilon_j$$

APPENDIX (E) EXCLUDING GROWTH

Growth is excluded from the model due to three major reasons. First, most studies measure growth as market value to book value of equity. This measure is biased when including newly listed firms to test a model that employs share returns. While the first year growth measure for a newly listed firm is $(1+r)$, share returns equals r . Thus, the inclusion of growth as control variable is likely to create bias in the results.

Second, if firm growth is captured by earnings growth, then growth is already captured by the variable representing change in earnings per share. Third, Cheng et al. (1999) present an assumption derived from the development of the standard share price growth model. They imply that firm growth is incorporated in the constant variable of the returns-earnings regression when the tests are cross-sectional. The rationalisation of their assumption can be expressed and developed as follows:

$$\begin{aligned}
 P_t &= \frac{E_{t+1}}{r - g} \\
 r - g &= \frac{E_t}{P_t} + \frac{gE_t}{P_t} \\
 r &= g + \frac{E_t}{P_t} + \frac{gE_t}{P_t} \\
 r &= g + \frac{E_t}{P_t} + \frac{(1+g)\Delta E_t}{P_t} \\
 r &= g + \frac{E_t}{\alpha P_{t-1}} + \frac{(1+g)\Delta E_t}{\alpha P_{t-1}} \\
 r &= g + \frac{1}{\alpha} \left(\frac{E_t}{P_{t-1}} \right) + \frac{(1+g)}{\alpha} \left(\frac{\Delta E_t}{P_{t-1}} \right)
 \end{aligned}$$

In a regression form this becomes:

$$R = \beta_0 + \beta_1 E_{jt} + \beta_2 \Delta E_{jt} + v_{jt}$$

In other research, the presence of an intercept is not implied by the theoretical relations (e.g. Ali and Zarowin, 1992; Easton and Harris, 1991). However, the developed standard share price growth (Cheng et al., 1999) model expects a positive intercept term approximating the overall growth for financial period in a cross-sectional returns-earnings model.

APPENDIX (F) TOTAL ACCRUALS REGRESSIONS

The following table presents the results of the regression used to estimate total accruals for Miscellaneous Industry as categorised by the ASX.

Table E: Estimation of the parameters of total accruals model for the Miscellaneous industry.

	Adjusted R² (F-Stat.)	γ_0	γ_1	γ_2	N
Pooled	0.58 (90.96)***	-3911.84 (-1.86)*	-0.17 (-6.15)***	-1.27 (-6.07)***	197
1997	0.09 (2.43)*	-2126.15 (-2.375)**	0.05 (0.68)	-0.03 (0.60)	43
1998	0.60 (23.97)***	4420.70 (0.53)	-0.17 (-1.61)	-1.34 (-6.80)***	46
1999	0.20 (5.28)***	2519.86 (3.70)***	0.01 (0.46)	-0.09 (-2.04)**	53
2000	-0.02 (0.61)	606.48 (1.24)	0.001 (0.04)	-0.04 (-0.82)	55

APPENDIX (G) MEAN RESPONSE COEFFICIENTS

The following table presents the results of the mean coefficients used to test the hypotheses.

Returns-Earnings Model

Table F-1: The mean earnings response coefficients of earnings level and change in earnings

$AR_j = \alpha_0 + \alpha_1 E_{jt} + \alpha_2 \Delta E_{jt} + \zeta_j$	
Coefficient (t-statistic)	Mean
Constant	-0.06 (-1.76)*
E_{jt}	0.75 (1.51)
ΔE_{jt}	0.20 (0.40)
R^2	0.11

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Mean represents the mean of the four yearly coefficients, and the t-statistic of the mean is obtained by dividing the mean by its standard error. Significance level at three degrees of freedom are 4.451 (0.01 level), 2.353 (0.05 level), and 1.638 (0.10 level).

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

Hypothesis One

Table F-2: The mean coefficient of regressing the absolute value of abnormal accruals on empirical indicators of corporate governance

Does corporate governance influence earnings management?				
$AAA_j = \gamma_0 + \gamma_1 OWNCON_{jt} + \gamma_2 CEO_{jt} + \gamma_3 BRDSE_{jt} + \gamma_4 BRDIND_{jt} + \gamma_5 AUDIND_{jt} + \gamma_6 AUDCMP_{ijt} + \gamma_7 OWNOUT_{jt} + \gamma_8 OWNMAN_{jt} + \gamma_9 DEBTRL_{jt} + \nu_j$				
Hypotheses	Corporate Governance	Mean (univariate)	Mean (multivariate)	Findings
H1A ₀	Ownership Concentration	0.12 (0.61)	0.03 (0.24)	Do not reject
H1B ₀	CEO dominance	-0.07 (-0.87)	-0.13 (-1.39)	Do not reject
H1C ₀	Board Size	-0.02 (-1.8)*	-0.27 (-1.79)*	Reject
H1D ₀	Board Independence	-0.37 (-1.17)	-0.46 (-1.05)	Do not reject
H1E ₀	Audit Committee Independence	-0.21 (-1.44)	-0.08 (-2.46)**	Reject
H1F ₀	Audit Committee Competence	-0.08 (-1.24)	0.01 (0.72)	Do not reject
H1G ₀	Independent Directors' Ownership	-0.003 (-0.03)	0.04 (1.46)	Do not reject
H1H ₀	Managerial Ownership	-0.02 (-0.80)	-0.12 (0.61)	Do not reject
H1I ₀	Debt Reliance	0.43 (1.10)	0.55 (1.13)	Do not reject

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Mean represents the mean of the four yearly coefficients, and the t-statistic of the mean is obtained by dividing the mean by its standard error. Significance level at three degrees of freedom are 4.451 (0.01 level), 2.353 (0.05 level), and 1.638 (0.10 level).

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

Hypothesis Two

Table F-3: The mean coefficients of regressing earnings response coefficients on the absolute value of abnormal accruals

Does earnings management influence the informativeness of earnings?						
$AR_j = \beta_0 + \alpha_0 E_{it} + \alpha_1 EAAA_{it} + \psi_0 \Delta E_{it} + \psi_1 \Delta EAAA_{it} + \zeta_j$						
Hypothesis	Test	E_{it}	$EAAA_{it}$	ΔE_{it}	$\Delta EAAA_{it}$	Findings
$H2_0$	Mean	0.91 (1.97)*	-2.34 (-0.61)	0.000 (0.00)	6.35 (0.90)	Do not reject
	Wald	0.819		0.004		

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Mean represents the mean of the four yearly coefficients, and the t-statistic of the mean is obtained by dividing the mean by its standard error. Significance level at three degrees of freedom are 4.451 (0.01 level), 2.353 (0.05 level), and 1.638 (0.10 level).

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

Hypothesis Three

Table F-4: The mean coefficients of regressing earnings response coefficients on the empirical indicators of corporate governance.

Does corporate governance influence earnings informativeness?						
Hypotheses	Corporate Governance	Earnings Type	Mean (univariate)	Mean (multivariate)	Wald Stat.	Findings
H3A₀	Ownership Concentration	E	1.95 (1.35)	0.23 (0.21)	0.9	Do not reject
		ΔE	-1.40 (-0.79)	0.48 (0.31)	0.02	
H3B₀	CEO dominance	E	-2.90 (-2.19)*	-3.21 (-2.40)**	5.62**	Reject[#]
		ΔE	1.35 (10.78)***	3.68 (2.55)**	1.75	
H3C₀	Board Size	E	-0.22 (-1.14)	0.21 (1.13)	0.003	Do not reject
		ΔE	-0.03 (-0.14)	0.07 (0.39)	0.0002	
H3D₀	Board Independence	E	1.70 (2.75)**	1.97 (1.90)*	0.01	Do not reject
		ΔE	-0.85 (-2.05)*	-1.37 (-1.98)*	0.21	
H3E₀	Audit Committee Independence	E	1.44 (2.23)*	-2.92 (-2.25)*	0.02	Do not reject
		ΔE	-1.01 (-0.80)	2.85 (0.70)	0.01	
H3F₀	Audit Committee Competence	E	1.55 (5.35)***	2.13 (4.37)**	2.45	Do not reject
		ΔE	-0.74 (-0.59)	-2.12 (-1.71)	0.47	
H3G₀	Independent Directors' Ownership	E	1.21 (1.86)*	-2.10 (-1.21)	1.8	Do not reject
		ΔE	-2.96 (-3.61)**	-1.44 (-0.36)	6.51**	
H3H₀	Managerial Ownership	E	1.92 (1.04)	4.25 (1.47)	0.02	Do not reject
		ΔE	-0.96 (-0.34)	-3.60 (-0.88)	0.21	
H3I₀	Debt Reliance	E	-0.91 (-0.27)	-0.67 (-0.22)	0.004	Do not reject
		ΔE	-2.57 (-1.16)	-2.25 (-0.68)	2.25	

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Mean represents the mean of the four yearly coefficients, and the t-statistic of the mean is obtained by dividing the mean by its standard error. Significance level at three degrees of freedom are 4.451 (0.01 level), 2.353 (0.05 level), and 1.638 (0.10 level).

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).

Hypothesis Four

Table F-5: The mean coefficients of regressing earnings response coefficient on the empirical indicators of corporate governance conditioned on the empirical indicator of earnings management

Does corporate governance influence earnings informativeness in the presence of earnings management?						
Hypothesis	Corporate Governance	Earnings Type	Pooled (univariate)	Pooled (multivariate)	Wald Stat.	Findings [#]
H4A₀	Ownership Concentration	E	1.70 (2.28)*	-0.33 (-0.34)	3.85**	Reject[#]
		ΔE	-0.69 (-0.69)	-0.06 (-0.03)	0.22	
H4B₀	CEO dominance	E	-1.81 (-0.86)	-1.95 (-0.59)	3.4*	Reject[#]
		ΔE	0.09 (0.06)	0.43 (0.13)	2.38	
H4C₀	Board Size	E	0.16 (0.98)	-0.02 (-0.12)	0.00	Do not reject
		ΔE	0.18 (1.41)	0.45 (1.16)	0.00	
H4D₀	Board Independence	E	1.07 (0.42)	2.09 (1.24)	0.03	Do not reject
		ΔE	0.35 (0.42)	-0.96 (-0.42)	0.05	
H4E₀	Audit Committee Independence	E	0.74 (0.50)	-1.8 (-0.72)	0.54	Do not reject
		ΔE	1.65 (0.93)	3.96 (-0.42)	0.01	
H4F₀	Audit Committee Competence	E	2.76 (4.91)***	3.63 (2.48)**	14.33***	Reject[#]
		ΔE	-4.05 (-1.49)	-8.2 (-2.38)**	3.42*	
H4G₀	Independent Directors' Ownership	E	1.01 (0.52)	-3.75 (-1.03)	0.51	Do not reject
		ΔE	-1.89 (-0.46)	-7.92 (-1.13)	10.37***	
H4H₀	Managerial Ownership	E	0.66 (0.51)	6.38 (1.33)	0.00	Do not reject
		ΔE	0.23 (0.07)	-0.74 (-0.12)	1.3	
H4I₀	Debt Reliance	E	-4.32 (-1.32)	-3.50 (-0.85)	0.18	Do not reject
		ΔE	4.23 (0.96)	5.40 (0.96)	4.33**	

* Correlation is significant at the 0.10 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed)

Mean represents the mean of the four yearly coefficients, and the t-statistic of the mean is obtained by dividing the mean by its standard error. Significance level at three degrees of freedom are 4.451 (0.01 level), 2.353 (0.05 level), and 1.638 (0.10 level).

All t-statistics are calculated using white (1980) heteroscedasticity corrected standard errors.

The results shown are controlled for beta risk (an earnings response coefficient determinant).